

Enhancing resilience among disadvantaged children through universal social and emotional learning

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Key to abbreviations/glossary

ABCD	Affective-Behavioural-Cognitive-Dynamic
ADHD	Attention Deficit Hyperactivity Disorder
ANOVA	Analysis of Variance
CASEL	Collaborative for Academic, Social, and Emotional Learning
CBCL	Child Behaviour Checklist
CFA	Confirmatory Factor Analysis
CONSORT	Consolidated Standards of Reporting Trials
CSP	Control Signals Poster
DfE	Department for Education
DV	Dependent Variable
EAL	English as an Additional Language
EEF	Education Endowment Foundation
EFA	Exploratory Factor Analysis
EPISCenter	Evidence-based Prevention and Intervention Support Center
ES	Effect Size
FSM	Free School Meals (Eligibility for)
FTE	Full-Time Equivalent
ICC	Intra-Cluster Correlation
IHE	Institute of Health Equity
ITT	Intention-To-Treat
KS1/2	Key Stage 1 / 2
MAR	Missing at Random
MCAR	Missing Completely at Random
MDES	Minimum Detectable Effect Size
MFFT	Matching Familiar Figures Test
MI	Multiple Imputation
MLM	Multilevel Modelling
MMR	Mixed Methods Research
MNAR	Missing Not At Random
NPD	National Pupil Database
PATHS	Promoting Alternative Thinking Strategies
PPA	Planning, Preparation and Assessment
PSU	Pennsylvania State University
PV	Predicator Variable
QUAL	Qualitative
QUANT	Quantitative
RCT	Randomised Controlled Trial

RQ	Research Question
SA	School Action
SACD	Social And Character Development
SAP	School Action Plus
SATs	Standard Assessment Tests
SDQ	Strengths and Difficulties Questionnaire
SEL	Social and Emotional Learning
SEND	Special Education Needs and Disability
SES	Socio-economic Status
SFP	School-Family Partnerships
SLT	Senior Leadership Team
SPS	Social Problem-Solving
SSEN	Statement of Special Education Needs
TA	Teaching Assistant
TIDieR	Template for Intervention Description and Replication
UP	Usual Practice
UPN	Unique Pupil Number
VIF	Variance Inflation Factor
WHO	World Health Organisation

Abstract

Enhancing resilience among disadvantaged children through universal social and emotional learning

Socio-economic disadvantage has been empirically established as being a risk factor that contributes to poorer outcomes, including children's mental health and/or academic achievement (Bradley & Corwyn, 2002; Department for Education, 2013; Green, McGinnity, Meltzer, Ford, & Goodman, 2005; Hetzner, Johnson, & Brooks-Gunn, 2010). Given the longer term consequences of these negative outcomes, exploring ways to buffer the negative effects of socio-economic disadvantage is an important area for education research (Collishaw, Maughan, Goodman, & Pickles, 2004). Universal social and emotional learning (SEL) interventions, such as the Promoting Alternative Thinking Strategies (PATHS) curriculum (Greenberg, Kusche, Cook, & Quamma, 1995), which aim to develop key skills through explicit teaching, yield great promise as an effective means through which to build resilience in children exposed to risk (Domitrovich, Cortes, & Greenberg, 2007; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Greenberg et al., 1995; Humphrey, 2013). The literature base suggests that interventions are not always implemented as fully intended by programme developers, with consequences for the success of expected outcomes (Lendrum & Humphrey, 2012). However, despite its importance, the role of implementation variability in the achievement of outcomes is a neglected area of research, with many studies failing to include implementation data in their analysis (Durlak et al., 2011).

The aim of the current study was to investigate the differential gains, in mental health and academic outcomes, after two years of exposure to PATHS, for children eligible for Free School Meals (FSM). A further aim was to examine the association between implementation variability (dosage, fidelity and quality) on outcomes for children eligible for FSM. A mixed methods design was used, with the qualitative strand providing complementary and explanatory data to the quantitative strand. The data was from the *PATHS to Success* cluster-randomised controlled trial, involving $n=45$ schools and $N=5218$ children (Humphrey et al., 2015). The mental health outcome was measured by the teacher-reported Strengths and Difficulties Questionnaire (SDQ), collected at baseline and after two years of implementation of PATHS. Academic attainment data was retrieved from the National Curriculum Test data for all pupils in Year 6 at the end of the trial. Multilevel Modelling (MLM) (Paterson & Goldstein, 1991) analyses were utilised in order to determine whether there were differential gains for children eligible for FSM, as well as exploratory analysis on the association between implementation variability and intervention outcomes for this group of children. Additionally, thematic analysis of 24 teacher interviews was conducted to provide supplementary data regarding perspectives of the implementation of PATHS.

Results indicated that, while there was an initial difference in mental health and academic outcomes, for children eligible for FSM compared with their non-eligible peers at baseline, overall there were no significant positive gains for children eligible for FSM after undertaking PATHS. With regard to implementation variability, exploratory analysis found that there was not a significant association between dosage and mental health outcomes, but high dosage was associated with an increased mathematics scores for children eligible for FSM. High and moderate quality lessons predicted higher externalising symptoms, while moderate fidelity was associated with higher internalising symptoms, for children eligible for FSM. Neither quality nor fidelity predicted significant differences in academic scores. The qualitative findings revealed reasons why programme implementation varied. Additionally, teachers' views on the impact of PATHS overall provided depth to conclusions drawn from the quantitative data. The implications of these findings are discussed, along with directions for future research.

Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Chapter 1:

Risk and socio-economic disadvantage

1.1 Introduction to chapter

This chapter introduces the concept of ‘risk’, and outlines some key ideas about the outcomes of mental health and academic attainment, which are the focus of this thesis. Section 1.2 introduces the key concepts of risk and mental health and well-being, as well as exploring the relationship between poor mental health and academic outcomes. This is followed by section 1.3 which defines what is meant by socio-economic disadvantage and examines some of the challenges faced when trying to accurately measure this variable. Previous research which has examined the risks for children from these backgrounds is explored in section 1.4, with a particular focus on the outcomes of mental health and academic attainment. Finally, in section 1.5, explanatory models and further contributing factors are detailed, in order to explain some of the reasons why children from socio-economically disadvantaged backgrounds generally fare worse in these outcomes than their non-disadvantaged peers. Section 1.6 provides a general summary of the chapter in preparation for Chapter 2.

1.2 Introduction to key concepts

1.2.1 Defining risk

Some children are more likely than others to experience negative outcomes, and the field of ‘risk and resilience’ has begun to identify factors or markers that underpin this increased probability (Humphrey, 2013). Kraemer et al., (1997) highlight the importance of clearly defining the terminology of risk and risk factors, which are often used interchangeably in the literature. Risk can be defined as “biological and environmental conditions that increased the likelihood of negative developmental outcomes” (Liaw & Brooks-gunn, 1994, p.360). Risk factors “indicate the agent or exposure or measurable characterisation” which contribute to risk (Kraemer et al., 1997, p.337) and include biological (e.g. low birth weight), parental (e.g. parental education, maternal ability), family structure (e.g. mother or father absence), economic (e.g. socio-economic disadvantage) and environmental (e.g. neighbourhood, housing conditions) factors (Liaw & Brooks-gunn, 1994). Risk factors are associated with increase in the probability, severity and duration of negative outcomes (Coie et al., 1993).

Risk factors can occur on various levels, including individual characteristics and the social and physical context. Using Bronfenbrenner's (1970) ecological framework, Atzaba-Poria, Pike and Deater-Deckard (2004) examined risk factors, at both the individual and environmental level, which have been seen to have an impact on children's mental health and behaviour. Reviewing the literature highlights that, at the individual level, risk factors for poor behavioural outcomes include difficult temperament (e.g. Eisenberg et al., 2001), low self-esteem (e.g. Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005), low IQ (e.g. Williams, Anderson, McGee, & Silva, 1990) and being male (e.g. Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). At an immediate environmental level (microsystem level), risk factors associated with poor mental health and behaviour include harsh parenting style (e.g. Deater-Deckard, Dodge, Bates, & Pettit, 1998), negative parent-child relationship (e.g. Shaw, Owens, Vondra, Keenan, & Winslow, 1996), and negative peer and sibling relationships (e.g. Rubin, Bukowski, & Parker, 2006). At the wider environmental level (exosystem level) risk factors include socio-economic status (e.g. Dodge, Pettit, & Bates, 1994), social support (e.g. Galand & Hospel, 2013) and parental marital relationship (Amato & Keith, 1991). Clearly many of these risk factors are not unrelated and therefore it is also important to consider how they co-vary and coincide with each other to influence behaviour (Evans & Whipple, 2013). For example, the individual risk factor of low self-esteem may be related to the parent-child relationship or parenting style, which may be the result of low socio-economic status (Bradley & Corwyn, 2002). In the current study, the main focus is on socio-economic status as a risk factor, with analysis of the probability of risk of poorer mental health and academic outcomes for those children who experience this risk factor. Research question 1, in particular, examines the probability of risk of poorer outcomes through comparing baseline measures of mental health and academic outcomes of children eligible for free schools and their non-eligible peers.

In her risk and prevention research, Garber (2006) emphasises the importance of exploring the underlying mechanisms and processes through which the likelihood of risk is increased. It is important to know which risk factors may impact negatively on a child's outcomes. If there is an understanding of the mechanism that links the risk factor to the outcome, then there is scope to intervene and possibly improve the outcome. Explanatory models and ideas for why socio-economic disadvantage is a risk factor are discussed in section 1.5. Additionally, examining the potential idea of intervening to alleviate the negative impact of risk factors is discussed in more detail in Chapter 2.

1.2.2 Defining mental health and well-being

Risk factors can have a profound impact on a variety of outcomes. However, the mental health of children and young people is of particular concern with approximately 11% in the UK experiencing clinically recognisable difficulties (Maughan, Collishaw, Meltzer, & Goodman, 2008; Green, McGinnity, Meltzer, Ford, & Goodman, 2005). These problems can include difficulties with sleeping, feeding, over-activity, oppositional behaviour, conduct disorder, somatic symptoms, depression, anxiety and other social and/or emotional problems (Cooper, 2010). Often these mental health problems are divided into two categories: externalising problems and internalising symptoms (Achenbach, 1978). Externalising problems (also considered undercontrolled behaviours) include impulsivity, aggression, conduct problems, disruptiveness and over-activity (Achenbach & Edelbrock, 1978). Internalising symptoms (also considered overcontrolled behaviours) include withdrawal, anxiety, depression and dysphoria (Achenbach, 1966). Although the co-occurrence of these two categories in individuals is well reported, the present study examines internalising and externalising behaviours separately using the Strengths and Difficulties Questionnaire (SDQ: Goodman, 1997). More detail about this measurement is contained within the methodology chapter (section 5.6.1). The separation of internalising and externalising behaviours, rather than as a combined total score, has been taken as a sensitivity precaution in case, for example, one score on either externalising or internalising is large enough to raise the total difficulties score when the outcomes are combined, leading to a skewed perception of any effects on these discrete constructs. This is a particular risk in a mainstream sample where the SDQ is not being used for clinical screening of suspected mental health problems, such as in the current study (Goodman, Lamping, & Ploubidis, 2010). Moreover, internalising symptoms as a separate construct has lagged behind in research compared with other areas of psychopathology. This may be because, unlike externalising problems which are very obvious to individuals working with children, internalising symptoms are seen as less problematic, sometimes considered “intropunitive” rather than overtly disruptive behaviours (Tandon, Cardeli, & Luby, 2009, p.593). However, internalising symptoms can have very detrimental consequences, and can impact on other outcomes such as academic achievement; therefore it is important to consider them. This is discussed in more detail in the next section (1.2.3).

Defining exactly what mental health *is* can be complex. As well as identifying externalising and internalising mental health problems and behaviours, it is also important to consider the question: if a mental health problem is not present, does that automatically signify

good mental health? This raises important questions around mental health and what it means to be mentally healthy. The World Health Organisation (WHO) defines mental health by suggesting that mental health is “as a state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (World Health Organisation (WHO), 2014). Interestingly, this definition focuses on the positive aspects, omitting mention of clinically diagnosable mental health problems. This seems to reflect the shift in understanding of mental health: examining mental health from a positive aspect is as important as identification of mental health problems (Vaillant, 2003). Similarly, Adi et al. (2007) adopt a definition of mental health which encompasses both positive and negative aspects, and includes: emotional health – being happy and confident, not depressed and anxious; psychological health – being resilient and autonomous; social/relational health – good relationships with others, and the opposite of conduct disorder, delinquency, interpersonal violence and bullying. This definition seems to offer more of a balanced view of mental health. Pro-social behaviours including helping, sharing, comforting and cooperating, are positive behaviours which support the development of social relationships and positive adjustment (Caprara, Barbaranelli, Pastorelli, Bandura, Zimbardo, 2000). Previous research has demonstrated a positive correlation between pro-social behaviours and various wellbeing outcomes (Eisenberg, Fabes, & Spinrad, 2006). Studies examining developmental trajectories have found a prosocial behaviour trajectory tends to be inversely related to mental health problems (Côté, Tremblay, Nagin, Zoccolillo, & Vitaro, 2002). Furthermore, while there were subgroup differences, Nantel-Vivier, Pihl, Côté, and Tremblay (2014) reported that high prosociality tended to co-occur with low levels of mental health problems, although they note that the right level must be achieved. This may be due to the attributes associated with pro-social behaviours which may promote positive mental health, such as confidence, social support, a positive disposition and self-esteem (Eisenberg, Fabes & Spinrad, 2006). The present study also examines the outcome of pro-social behaviour in addition to measuring mental health problems, in order to provide a more balanced examination of mental health outcomes.

1.2.3 Developmental cascades – the associations between mental health and academic attainment

There is a long history in developmental theory examining how different systems and domains can be associated with each other. This idea of developmental cascades refers to “the cumulative consequences for development of the many interactions and

transactions occurring in developing systems that result in spreading effects across levels, among domains at the same level, and across different systems or generations” (Masten & Cicchetti, 2010, p.491). Previous research has shown that mental health may have an effect on academic attainment. Gutman and Vorhaus (2012) found that social, emotional and behavioural well-being at aged 10 and 13 was significantly correlated with academic achievement in Key Stage 2 and above and school engagement. This relationship has also been found to be bidirectional, with academic failure leading or contributing to mental health problems (Brier, 1995; Dodge & Pettit, 2003; Schwartz, Gorman, Duong, & Nakamoto, 2008). A third possibility must also be considered: that there is some other cause which effects both mental health and academic achievement, creating a spurious result that creates the illusion that these two variables are directly connected (Masten et al., 2005). For example, Aunola, Stattin, & Nurmi (2000) found that adolescents’ achievement strategies (i.e. pupils who are afraid of failure are likely to avoid a task and those who are optimistic are likely to put in more effort and consequently do better) were associated with both their school adjustment, and also overall externalising and internalising behaviours.

In terms of cascading effects, the relationship between externalising behaviours and academic performance has been highlighted through research (Hinshaw, 1992; Lynam, Moffitt, & Stouthamer-Loeber, 1993). Maguin and Loeber (1996) found a bidirectional relationship between externalising behaviours, such as attention problems, hyperactivity and impulsiveness, and low academic attainment in their meta-analysis. Similar research found associations between poor academic and educational outcomes and children with externalising behaviours, such as Attention Deficit Hyperactivity Disorder (ADHD) (Loe & Feldman, 2007), Conduct Disorder (CD) (Frick et al., 1991) and Oppositional Defiance Disorder (ODD) (Burke, Loeber, & Birmaher, 2002). However, this may also be because these disorders have a degree of comorbidity (Loeber, Burke, Lahey, Winters, & Zera, 2000; Maughan, Rowe, Messer, Goodman, & Meltzer, 2004). Moilanen, Shaw, and Maxwell (2010) suggest one reason for the association between externalising problems and poor academic performance may be that the behaviour of pupils who have externalising problems (such as aggression and impulsivity) limits the opportunities for learning in the classroom (and can even lead to exclusion), which impacts on academic attainment. The bidirectional relationship suggests that academic failure also worsens behavioural problems as children progress through school (Masten et al., 2005). This may be the result of these pupils rejecting, and being rejected by, normative class peers leading to withdrawal from activities with a focus on school and learning, and association with

peers who display anti-social behaviours (Deater-Deckard, 2001). Further research also suggests that academic failure and lack of school commitment are associated with anti-social behaviours (Browning, Thornberry, & Porter, 1999).

Although it does not seem to have as profound an effect on academic achievement as externalising behaviour problems, a relationship between internalising symptoms and academic performance has also been seen. A number of studies have reported the link between depressive symptoms and lower academic attainment (Fergusson & Woodward, 2002; Forsterling & Binsler, 2002; Shahar et al., 2006). Moilanen et al. (2010) suggest that internalising symptoms (for example, depression and anxiety) may undermine academic achievement by impacting on cognitive functioning, or by affecting children's attention in class, subsequently impeding their participation and focus in classroom learning activities. Furthermore, internalising symptoms, such as being withdrawn or passive, can inhibit the use of adaptive learning strategies, which may impact on a child's academic self-efficacy and performance (Moilanen et al., 2010). The developmental cascades effect may also lead to internalising symptoms stemming from externalising problems and academic achievement. Masten et al., (2005) found that behaviour problems in children can undermine academic achievement, which, in turn, can negatively impact on emotional difficulties. Similarly, internalising symptoms which lead to academic failure may lead to children requiring extra support or being retained. Retained children are often viewed negatively by peers which can lead to the breakdown of peer relationships and inflate antisocial development (Dodge & Pettit, 2003b).

In light of this, it is important to develop positive mental health in children, for a variety of reasons, including the potential benefits to academic performance. This is significant to the current thesis since a key aim is to explore the development of positive mental health through preventative intervention for children at risk. Additionally, the current thesis examines the effect of preventative intervention on academic outcomes. Preventative intervention is discussed further in Chapter 2.

1.3 Disadvantaged pupils - who are they?

1.3.1 Defining socio-economic disadvantage

Socio-economic status (SES) is notoriously hard to clearly define, as it covers a whole range of issues and is defined in many different ways in the literature base. One definition is "the relative position of a family or individual on a hierarchical social structure, based on their access to or control over wealth, prestige and power" (Mueller & Parcel, 1981,

p.14). However, it is not as simple as social stratification due to there being no clear way of measuring disadvantage. Previously, measures of SES have included educational attainment, occupational status and income, wealth including tangible possessions, and even more indiscriminate factors, such as participation in culture and politics (Miech & Hauser, 2001). Miech & Hauser (2001) suggest socio-economic disadvantage can be understood as families or individuals who have less access or capacity to create goods or resources that are valued in our society. This is echoed by Bradley and Corwyn (2002), who suggest socio-economic status represents capital: financial (e.g. money and material resources), human (e.g. education) and social (e.g. presence of both parents/extended family).

Often the idea of socio-economic disadvantage is used interchangeably with the concept of poverty, particularly in the media. There has been much debate over the concept of poverty, which is often split into two categories: relative poverty and absolute poverty, the former being the more common (Seymour, 2009). Usually relative poverty is defined through setting an income threshold and those who fall below it are considered “in poverty”. The UK government sets this threshold at 60% of the median household income. However, this measure has been criticised as being a fairly arbitrary measurement as it is a proxy measurement, and is not validated by actual standards of living (Gordon, 2006). A major recent research project, the Poverty and Social Exclusion (PSE) study (Gordon et al., 2013) on deprivation in the UK aimed to evaluate poverty in the UK looking at actual living standards and access to necessities for life (as decided by the general public). This research estimated that 33% of the UK population suffers significant socio-economic disadvantage, while about a quarter have an unacceptably low standard of living. This includes being able to heat homes during the winter, skimping on food and constantly struggling to pay bills. Comparing this research to previous similar surveys of poverty, Gordon et al. (2013, p.2) also found that more children “lead impoverished and restricted lives today than in 1999”, with around half a million children unable to afford a hobby or leisure activity, and the same amount who do not have access to a computer at home on which to do homework. In the UK, it is estimated that approximately 2.3 million children are living in relative poverty. Of these children, although some will thrive despite growing up in poverty, for many children growing up poor can mean a childhood of mental health problems, academic under-achievement, isolation from peers, and a lifetime of disadvantage (Department for Work and Pensions, Department for Education, 2012). Despite how socio-economic disadvantage is defined, it seems clear that it is a large problem in British society and that the short-term and long-

term impact of socio-economic disadvantage on families and individuals can be great. This accentuates the significance of the current study's aim in examining differential gains of school-based intervention for children from socio-economically disadvantaged backgrounds.

1.3.2 Measuring SES

Socio-economic status (SES) is arguably one of the most commonly used contextual variables in education research (Sirin, 2005). However, due to the complex nature of SES, it is often difficult to accurately measure and there is much ambiguity in interpreting findings. Research utilising SES as a key variable stems back many years, and includes a range of measures. However, many of the measurements of SES are variable over time and context. For example, some past research has made implicit assumptions regarding family composition, with a focus on the father's occupation/education (Entwisle & Astone, 1994). More current research includes broader measures to take into account single parent families and families in which the mother is the main breadwinner. Other measures commonly used include contextual/neighbourhood indices, such as the Income Deprivation Affecting Children Index (IDACI), which measures the percentage of low-income families in any super-output area¹. However, there may be issues with this kind of data which account for a wide area range over individual family circumstances. Sutherland, Ilie, and Vignoles (2015) found that the predictive power of area data was weaker in academic outcomes, particularly at primary age, than other commonly-used measures, for example eligibility for Free School Meals (FSM). They suggest this may be because peer effects are less significant at primary age, or that school dividing happens later in a child's education, so neighbourhood effects are more strongly correlated with older children's academic performance. Similarly, the accuracy of the IDACI has been considered flawed in that around 10% of cases are missing from IDACI scores, which is consequential for analysis (Gorard, 2012).

A frequently used measure is household income, which reflects the potential for social and economic means available to children within a family (Sirin, 2005). UK research indicates that low income does have an impact on children's outcomes, even after controlling for variables such as ability (Introna, Introna, Whitley, & Whitley, 2004). Related to income, parallel measures of parental education and occupation have found

¹ Super Output Areas (SOAs) are a set of geographical areas developed following the 2001 census.

similar results. Gregg, Propper, and Washbrook (2014) found that parental education was consequential for children's development across a spectrum of outcomes. Occupational status also provides information regarding the education and income associated with the occupation, as well as cultural ideas of the occupation (Hauser, 1994). The relationship between parental education/income/occupation and children's outcomes is not straightforward however, and the potential reasons as to the links are discussed further in the chapter (section 1.5).

Eligibility for Free School Meals (FSM) – a criteria met by families who are claiming certain benefits (e.g. income support or income-based jobseeker's allowance²) - is a widely accepted proxy measure of parental income. Additionally, FSM data is a frequently used measure in educational research in the UK (Hobbs & Vignoles, 2007). This is because much educational research relies on children's background data collected by the Department for Education (DfE) or local authorities, which often does not include a measure of family income, but does include eligibility for FSM (Hobbs & Vignoles, 2010). Previous research that has utilised eligibility for FSM as a main variable of interest includes: associations between socio-economic disadvantage and academic achievement (Shuttleworth, 1995; Strand, 1999a), examining the social segregation of low and high income children between schools (Allen & Vignoles, 2007; Goldstein & Noden, 2003) and investigating effects of percentages of children from socio-economically disadvantaged backgrounds in a school on pupil performance (Schagen & Schagen, 2005). Sutherland et al. (2015) also found that, even when included alongside a range of other SES measures, FSM remained statistically related to KS2 outcomes.

There are key characteristics which have been found to be similar for pupils eligible for FSM, which may contribute to them being at-risk for poorer outcomes. Pupils with any kind of special needs provision are more likely to be eligible for FSM. Gorard, (2012) found that 17.3% of non-FSM pupils have some kind of learning difficulty or special need compared with 35.6% of FSM pupils. Children from minority ethnic backgrounds are also more likely to be eligible for FSM. Around 83.7% of pupils not FSM eligible compared with 66% of eligible for FSM pupils are White (Gorard, 2012). Similarly, pupils who speak English as an additional language (EAL) are more considerably more likely to be eligible for FSM. Around 20% of children eligible for FSM speak EAL, compared with 6.6% who are not eligible (Gorard, 2012). Children eligible for FSM are also more

² <https://www.gov.uk/apply-free-school-meals>

likely to be in community schools and live in areas with higher amounts of other low income families (Gorard, 2012).

There are two main potential limitations to using FSM as a proxy for socio-economic disadvantage. Firstly, eligibility for FSM is variable and can fluctuate, particularly with economic cycles, i.e. eligibility increases during recessions. Secondly, some parents may feel stigmatised about claiming FSM, therefore do not register their children as eligible, even though they are living in circumstances of economic disadvantage. However, the difference in the number of pupils in England who are both eligible and taking FSM continues to decrease year on year, with Gorard, (2012) suggesting that the difference between the two is negligible. Sutherland et al., (2015) found that FSM eligibility was the “best practical proxy” of SES in terms of practicality and capturing variation as well as alternative measures. They also found that FSM eligibility was better at predicting pupil achievement than some other proxy indicators, such as neighbourhood measures of deprivation (Sutherland et al., 2015). In this regard, there is strong justification for utilising FSM eligibility as the most suitable measure of socio-economic disadvantage in the present study. Additionally, the large sample of children used in the current study should help to mitigate discrepancies in the two limitations mentioned above also. Section 5.6.3 discusses in more detail the statutory requirements for families who fit the criteria for eligibility for FSM.

1.4 What are the risks for those from socio-economically disadvantaged backgrounds?

Socio-economic disadvantage has been empirically established as conferring risk (Bradley & Corwyn, 2002; Green et al., 2005). Individuals from socio-economically disadvantaged backgrounds are more likely to be at risk from physical health problems (Cohen, Janicki-Deverts, Chen, & Matthews, 2010; Galobardes, Smith, & Lynch, 2008; Galobardes, Lynch, & Davey Smith, 2004), mental health problems (McLaughlin et al., 2011; Murali, 2004; Weich & Lewis, 1998) and deficits in cognitive development (Duncan et al., 1994; Smith, Brooks-Gunn, & Klebanov, 1997) than their more affluent counterparts. Associations have also been found between poverty and other risk factors, such as maternal depression, parental abilities, single parents or unstable family structure, stressful life events and poor neighbourhood environment (Ackerman, D’Eramo, Umylny, Schultz, & Izard, 2001; Bornstein, Hahn, Suwalsky, & Haynes, 2003; Kato, Brooks-gunn, & Duncan, 1994; Liaw & Brooks-gunn, 1994).

Previous research has also shown that children subjected to socio-economic disadvantage fare poorly on a range of health and well-being indicators (Holsen, Iversen, & Smith, 2009). An international study examining social determinants of health and well-being among young people throughout Europe found that family affluence was positively associated with self-rated health and life satisfaction and healthy eating patterns (Currie et al., 2010). Correlations between childhood poverty and a range of negative outcomes, such as dropping out of school, teenage pregnancy, delinquent behaviour, alcohol/drug use and unemployment in early adulthood, have also been reported (Duncan et al., 1994; Hawkins, Catalano, & Miller, 1992; Korenman, Miller, & Sjaastad, 1995; Mcleod & Shanahan, 1993; Pagani, Boulerice, Vitaro, & Tremblay, 1999). Moreover, children who are eligible for FSM are four times more likely to receive a permanent exclusion and three times more likely to receive a fixed period exclusion from school than children who are not eligible for FSM (Department for Education, 2014). In light of these findings, the current thesis examines potential gains for children eligible for FSM after exposure to universal social and emotional learning (SEL), given the risk for poor trajectory.

1.4.1 Disadvantage and mental health outcomes

In her systematic review of 55 studies, Reiss (2013) found 52 studies highlighted an inverse relationship between at least one marker of socio-economic disadvantage and mental health problems in children and adolescents – children from socio-economically disadvantaged backgrounds were up to three times more likely to develop mental health problems than their peers from non-disadvantaged backgrounds. Internationally, there is much research which highlights the link between socio-economic inequalities and child mental health problems. Assis, Avanci, and Oliveira (2009) found, in a cross-sectional study of children aged between six and 13, who live in very poor socio-economic conditions in Brazil were significantly more likely to have lower social competence and behavioural problems. The complexities of low socio-economic background in a developing country, with regards to less access to health care, higher levels of people from low socio-economic backgrounds and lack of support for those suffering poverty may contribute to the inequalities in mental health. However, similar inequalities are also seen in affluent countries which are characterised as having a high quality of life. Perna, Bolte, Mayrhofer, Spies, and Mielck (2010) undertook a cross-sectional analysis of data of 1265 parents of preschool children in Munich. They grouped children as low, medium and high on variables which indicate socio-economic status (e.g. household income and parental education). Children in the low SES group showed higher prevalence of borderline or abnormal total difficulties, on the SDQ total difficulties score, than children

in the high SES group. Moreover, Green et al. (2005) found that children in the UK who were diagnosed with emotional disorders were more likely to live in households with gross incomes under £300 per week than those without difficulties. Furthermore, it has been found that children who live in sustained poverty during their childhood are more likely to have poorer mental health outcomes, including worse social and emotional functioning (Duncan et al., 1994; Guo & Harris, 2000).

Socio-economic disadvantage has been found to be more strongly associated with mental health problems in younger children than those over twelve (Lipman, Offord, & Boyle, 1994; McLaughlin et al., 2011). In fact, socio-economic status can be a risk factor for children as young as four and five. Children from low income families were more likely to show externalising and internalising behaviours, assessed using the child behaviour checklist (CBCL) in children aged 5, in a longitudinal study of 7661 children (Bor et al., 1997; Najman et al., 2004). Although this study is now becoming outdated (study began in 1981) and can be considered weak in its measurements of SES, more recent and in depth research also report similar findings. Davis, Sawyer, Lo, Priest, and Wake (2010) assessed several indicators of socio-economic disadvantage, such as parental unemployment and low education, sole parenthood and low income, and found these predicted more mental health problems (using the teacher and parent-rated SDQ) in a sample of approximately 5000 children aged four to five. Moreover, Huaqing Qi and Kaiser (2003) found, in a review of 30 research reports, almost 30% of preschool children from low-SES backgrounds were reported to have behaviour problems, compared to 3-6% of the expected level of behaviour problems for that age group. There is much evidence to suggest that children who show emergent externalising behaviour problems at a young age are likely to develop serious behaviour and mental health problems as they grow older and into adolescence (Duncan et al., 1994; Laird, Jordan, Dodge, Pettit, & Bates, 2001; Stormont, 2002).

The association between mental health and socio-economic disadvantage is complex. There is some contention around the causality and effect of socio-economic disadvantage on children's mental health outcomes. Some researchers have raised concerns regarding unmeasured factors which may contribute to parental low income and unemployment, such as mental health and abilities, which will also impact on their children. Therefore, they argue, it is not necessarily economic disadvantage which effects the children's mental health, but a parental factor which impacts on both outcomes (Yeung, Linver, & Brooksgunn, 2002). However, measures of socio-economic deprivation or disadvantage vary

greatly through the plethora of research in this area, and often lead to the same conclusions, suggesting an association with children's mental health.

1.4.2 Disadvantage and academic attainment outcomes

Academic attainment is of growing concern, with approximately 20% of children leaving primary school without achieving expected levels in English and Mathematics (Department for Education, 2012). Only approximately 60% of children who are eligible for FSM reach the expected level in English and Mathematics in Key Stage 2, compared with approximately 80% of all other pupils (Department for Education, 2011).

The relationship between socio-economic status and academic attainment has been long reported (White, 1982). Previous research has shown that SES can cause small or large differences in academic achievement. Sirin (2005) undertook a meta-analysis of research published in this area between 1990 and 2000 and found a complex relationship between SES and academic achievement. They noted a variety of measures being used for SES and academic achievement, causing issues with interpreting the data. However, the meta-analysis highlighted the strongest correlation between family SES and academic performance at the student level, when examining the various measurements of SES over a range of studies. There is also research which looks further into the reasons behind poor academic performance by pupils from low SES backgrounds. In an analysis of socio-economic differences in primary school literacy, Duncan and Seymour (2000) found that children from low socio-economic status performed at the same level, in word recognition tests, as children from high socio-economic status backgrounds in the year below. These children also showed delayed acquisition of letter-sounds and metaphonological awareness, which contributed to lower overall performance in their primary school literacy work. However, Duncan and Seymour (2000) noted that progress was being made by children in both the low SES and high SES group in each year, however the children in the low SES group's learning development was subject to a delay in the components of literacy work.

The impact of socio-economic disadvantage on academic achievement has been seen to vary by age; however, research in this area is mixed. In a meta-analysis of almost 200 studies conducted pre-1980, White (1982) reported that, as pupils get older, the correlation between SES and school attainment reduces. White suggests this could be because pupils from lower SES backgrounds tend to leave school earlier or that the impact of the schooling process reduces the effect of the home background. However, this meta-

analysis is becoming outdated and more up-to-date research has contradicted these findings. Some longitudinal studies have found that the academic attainment gap between children from low SES backgrounds and those from more affluent SES backgrounds does not change over time (Duncan et al., 1994), with some reporting it even increases as children move from middle childhood to early adolescence (Pungello, Kupersmidt, Burchinal, & Patterson, 1996). Strand (1999) also found that pupils entitled to FSM start behind their peers at the beginning of school and this gap increases throughout Key Stage 1.

As described in section 1.2.3, developmental cascades theory posits a relationship between one domain and another. As has already been discussed, children who grow up in socio-economic disadvantage are more likely to have mental health problems which may lead to poorer academic outcomes. Similarly, poor academic achievement at school has been found to contribute to mental health problems in later life (Power & Manor, 1992). Therefore, the relationship between socio-economic disadvantage, mental health and academic can be considered circular, as illustrated below:

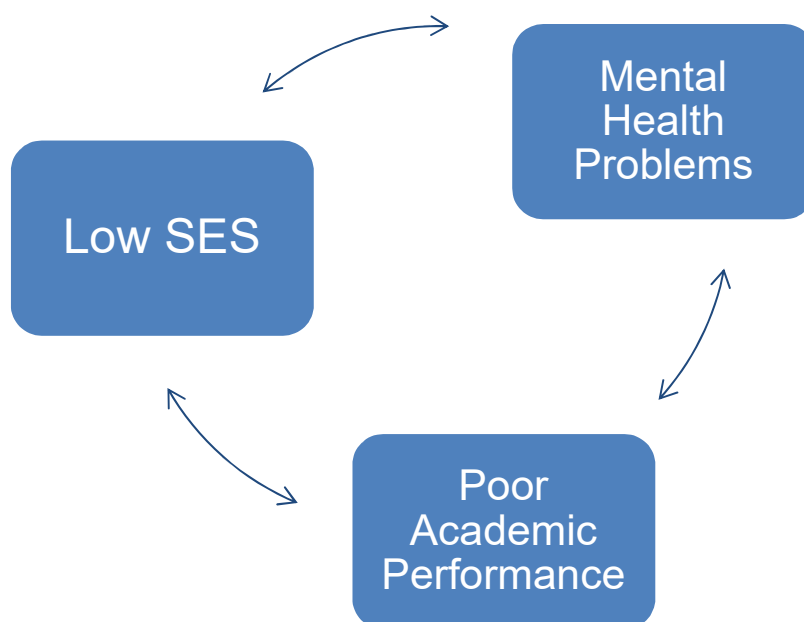


Figure 1: Relationship between socio-economic disadvantage, mental health and academic achievement

Given the impact of mental health problems on academic attainment found, combined with children growing up in socio-economic disadvantage being more likely to have mental health problems, the link between socio-economic disadvantage and academic underachievement is unsurprising. Chapter 2 examines potential ways that this cascading

effect may be broken. This is discussed in reference to developing resilience to buffer the effects of socio-economic disadvantage on mental health and academic achievement, which is a key focus of the current study.

1.5 Why might these risks occur?

Socio-economic disadvantage itself has been found to be a poor indicator of adversity, however, it is a correlate of multiple risk factors that together can lead to poor outcomes (Yates, Egeland, & Sroufe, 2003). It can be considered a construct that captures various aspects of power, status and economic well-being (Conger & Donnellan, 2007). From this perspective, socio-economic disadvantage is a distal risk factor whose effects are interceded by proximal risk factors, such as family structure, parenting behaviours/quality, access to resources and neighbourhood and community influences (Yates et al., 2003).

There are many different reasons why children from socio-economically disadvantaged backgrounds may be more at risk of poorer outcomes than their peers from more affluent backgrounds. Differences in parenting styles, home environment, access to resources, neighbourhood and early childhood education and care may impact on social and emotional development (Hetzner et al., 2010). Masten et al. (2005) suggest that the risk of poorer mental health and academic outcomes for pupils from socio-economic disadvantaged backgrounds may also indicate common causes which impact on both outcomes. This is also related to the idea of developmental cascades, in which mental health problems may impact on academic achievement and vice versa. Many theoretical models and potential explanations have been suggested to understand why children from socio-economically disadvantaged backgrounds may be more at risk. These are explored in more detail in the following sections, in order to provide insight into why children who experience more socio-economic disadvantage may be at risk of poorer outcomes.

1.5.1 Family investment model

One proposed explanation for the risk associated with children from socio-economically disadvantaged backgrounds is the family investment model. This model theorises that the association between income and positive child development is through the ability to purchase resources, such as educational toys and books, and socially enriching and educational experiences, such as trips to museums, that are conducive to a child's positive well-being and development (Kiernan & Huerta, 2008; Magnuson & Duncan, 2002).

Yeung et al. (2002) suggest that income enables families to invest in the human capital for their children, through purchasing resources and services such as schools, child care, nutritional foods, housing, neighbourhood environment and stimulating learning materials and activities, thus promoting positive child development. Previous research has highlighted the ability of higher income parents to provide richer learning environments for their children. This was also presented as a reason children from families living in poverty scored between 6 and 13 points lower on standardised academic assessments than children from more affluent backgrounds (Smith, Brooks-Gunn, & Klebanov, 1997).

Although this model may identify some of the associations between income and child development, it is not without criticism, particularly as it does not take into account mediating variables such as quality of parenting and family life, only material investments. Flouri, Mavroveli, and Tzavidis (2010), using multilevel modelling, examined the pathways of influence of area and family contextual risk on children's behavioural outcomes. They found that children are at higher risk of emotional and behavioural problems, if they grow up in families experiencing high levels of change and disruption, rather than in families experiencing high levels of poverty. Cooper and Stewart (2013) undertook a systematic review of 34 studies to investigate the impact of household financial resources on children's outcomes. They found effects of low income on outcomes that indirectly affect children, such as parenting quality, maternal depression and the home environment. While the findings were mixed, Cooper and Stewart, (2013) also found some supportive research that children from poor backgrounds were disadvantaged in terms of resources and experiences, which was associated with a negative effect on cognitive outcomes. This included literature which suggests that financial investments may be more important for academic outcomes, while parental factors may have more impact on behavioural outcomes (Gershoff, Aber, & Lennon, 2007; Violato, Petrou, Gray, & Redshaw, 2011). The literature on financial investment alone is sparse, which may be due to the difficulty in distinguishing and separating the underlying processes of living in disadvantage. It can be argued that these financial aspect and associated home and parental characteristics of disadvantage are not mutually exclusive, and these factors interact with each other.

Although there is undoubtedly a link between other factors, such as parenting quality and family life associated with poorer outcomes for children growing up in socio-economic disadvantage, the amount of financial income a family has also seems to have some impact

on outcomes. Education and school can potentially have the highest benefits for these children, as it may provide resources that they do not have access to at home. Therefore, school-based interventions which aim to improve mental health and academic outcomes may provide extra benefits for these children who are not exposed to these kinds of resources at home. This is discussed further in the following two chapters.

1.5.2 Family stress model

As mentioned in the above section, there are a number of confounding factors which may explain the link between socio-economic disadvantage and poor outcomes, such as parental education and approaches. The Family Stress model hypothesises that socio-economic disadvantage impacts on parental mental health, influencing parenting practices which may, subsequently, have a negative effect on child outcomes (Elder & Caspi, 1988). The negative impact of socio-economic disadvantage on parenting behaviour is strongly associated with the effect of poverty on children's development (Yates et al., 2003). Faced with the pressures of needs to be filled and a lack of resources in which to meet them, socio-economically deprived families are disproportionately affected by parental mental health problems and addiction, which has been seen to have negative consequences on parental abilities to provide warm, nurturing and responsive parenting (Brooks-Gunn & Duncan, 1997; Yates et al., 2003). Previous studies have reported a relationship between parenting practices and both children's mental health and cognitive abilities (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Landry, Smith, Miller-Loncar, & Swank, 1997).

Similar research indicates that socio-economically deprived women, especially mothers of young children, are more likely to experience psychological problems than women from non-deprived backgrounds (Petterson & Albers, 2001). Additionally, children with depressed mothers have significantly higher rates of mental health problems than children whose mothers are not depressed (Goodman et al., 2011). In their meta-analytic review of 46 observational studies, Lovejoy, Graczyk, Hare, and Neuman (2000) reported that maternal depression impacted on parenting ability: depressed mothers showed more irritability and hostility towards the child and/or withdrawn parenting. This is supported by other studies which have found that depressed mothers are more likely to be disengaged, critical, less responsive and less competent parents than non-depressed mothers (Carter, Garrity-rokous, & Chazan-cohen, 1997; Goodman & Gotlib, 1999; Goodman, 2007; Murray & Cooper, 1997).

The Family Stress Model also posits that economic pressure has an adverse effect on interpersonal processes in relationships, including romantic unions as well as parent-child relationships, which can have detrimental consequences for children's outcomes (Donnellan, Conger, McAdams, & Neppl, 2009). Single parenthood is also more prevalent in low socio-economic status families (Bradley & Corwyn, 2002). Research in this area suggests that, generally, children who are brought up by a single parent do not fare as well as those reared in two-parent families (Marcia & Mary, 2001). Children raised in single parent families have been found to be at increased risk for externalising behaviours (e.g. Najman et al., 2004), poorer psychological adjustment and social difficulties (e.g. Amato & Keith, 1991) and lower academic achievement (e.g. Amato, Patterson, & Beattie, 2015). Some of the reasons for this have been attributed to the impact of parental absence, the mental health and well-being of being a lone parent, interparental conflict and economic hardship (Amato, 1994).

However, separating the Family Investment and Family Stress models has proven to be difficult in previous research due to the overlap, with some researchers suggesting that the economic resources and parental mental health are not independent of each other (Kiernan & Huerta, 2008). Testing these hypotheses has proven to be a very complicated task, as experimental manipulation of income is very difficult. One study, which examined the impact of a welfare reform initiative, which improved work mandates and enhanced earnings for disadvantaged families, found improvements in children's behavioural symptoms once parental income was increased (Gennetian & Miller, 2002). However, this study was restricted to single-parent families and used maternal-report of children behaviour, which may include a bias. Moreover, maternal mental health and well-being was not assessed, so it is hard to gauge whether there was a positive change in parental mental health, or increased access to resources which contributed to the improvement of the children's behaviour symptoms.

Despite the difficulties in separating out the processes of socio-economic disadvantage which affect outcomes, it is clear that parenting plays a significant role in the development of children's behavioural and mental health. Schools may be able to compensate in some ways for this by creating nurturing environments and relationships between teachers and pupils. This is pertinent to the current study, given the focus of school-based intervention, and is discussed in further detail in Chapter 2.

1.5.3 Social selection vs social causation

For years, there has been much interest in the question of social selection vs social causation as a way of explaining the inverse relationship between socio-economic factors and mental health issues (Dohrenwend, 2000; Peterlin & Scher, 2013). The Social Causation hypothesis is very similar to the Family Stress model in that it suggests that individuals develop psychological problems as a result of living in adverse circumstances (Dohrenwend, 1966). In contrast social selection (sometimes referred to as the “downward drift” theory) theorises that mental health issues limit an individual’s ability to progress in life, via education and work, which leads to lower socio-economic status, or prolonged low socio-economic status (Peterlin & Scher, 2013). In other words, it can be understood that in social selection the mental health problems affects the socio-economic status and in social causation the socio-economic status affects the mental health issues. However, it is also worth considering that these factors may reciprocally and dynamically affect each other (Warren, 2009). Rutter (2003) argues that it is not this simple, and there is some crossover between social causation and social selection, as parents who suffer poverty may do so because of either a genetic predisposition (social selection) or environmental adversities (social causation), or more likely a mixture of the two.

Longitudinal studies which demonstrate that socio-economic disadvantage predicts adverse mental health outcomes support the theory of social causation (e.g. Link, Phelan, Link, & Phelan, 1995; Shaw, Winslow, Owens, & Hood, 1998). Furthermore, in their naturalistic study, Costello, Compton, Keeler, and Angold (2003) aimed to test the role of social selection vs social causation through their longitudinal study of socio-economic disadvantage and child mental health. During the study a casino opened in the Indian Reserve where their sample lived, which moved 14% of participant families out of poverty. The four years after the casino opened, the children whose families had a supplemented income and had moved from the poverty threshold showed a significant reduction in behavioural symptoms of conduct and oppositional defiant disorders. However, anxiety and depressive symptoms were not affected. Although it is not fully conclusive, as there is no way of knowing whether there were other factors which contributed to the reduction in behavioural symptoms reported, such as the small sample size of children who moved out of poverty, Costello et al.'s (2003) findings do go some way to supporting the hypothesis of social causation.

Social selection has been supported by research, commonly twin or adoption studies, which indicate some mental health problems associated with socio-economic disadvantage also have a genetic component (e.g. South & Krueger, 2011; Sprich, Biederman, Crawford, Mundy, & Faraone, 2000). However, these studies often show that genetic factors alone do not account for mental health problems and that environmental factors associated with SES must also contribute (Dohrenwend et al., 1992). Some social mobility studies also support social selection theory by highlighting that some mental health problems predict poor educational and work outcomes. Miech et al. (1999) found that externalising problems (e.g. conduct disorder and ADD) in adolescence lead to academic failure and future low socio-economic status. However, their research also suggested that low SES was a predictor of developing these mental health problems. Miech et al. (1999) suggest that different mental health problems are related differently to socio-economic status, with some seeming to cause low SES and some seeming to be the effect of low SES.

As highlighted, the distinction between social causation and social selection is complex. Despite their previous introduction as competing explanations for the link between SES and mental health problems, research highlights that the two are not mutually exclusive (Johnson, Cohen, Dohrenwend, Link, & Brook, 1999). However, it is important to acknowledge both the relationship and distinction between them when considering strategies for prevention and enhancing resilience (Rutter, Pickles, Murray, & Eaves, 2001). The implications of these theories for the current thesis are significant in understanding why there is a particular need to enhance resilience for children from low socio-economic backgrounds.

1.5.4 School level disadvantage

For many at-risk children, school level factors can also contribute to a detrimental effect on outcomes. A critical factor can be if the schools they attend have a high proportion of high-risk children similar to themselves, which can present educational, social and behavioural challenges for the teacher (Conduct Problems Prevention Research Group, 2010). A review of multilevel studies on the school effect on pupil outcomes found that, generally, pupils in high SES schools performed better than pupils in low SES schools (Sellström & Bremberg, 2006). Similarly, previous research has found higher levels of socio-economic disadvantage within a school has a negative effect on pupil behaviour (Colder, Mott, Levy, & Flay, 2000; McLoyd, 1998). This may be because peers often serve as models and reinforcers of behaviour within a classroom (Barth, Dunlap, Dane,

Lochman, & Wells, 2004). Similarly, children often adapt and adjust their behaviour to suit the norm – in classrooms with lots of poor behaviour this may have negative consequences on an individual pupil's behaviour (Henry et al., 2000). For a child who is at-risk with externalising problems, the disruptive nature of higher proportions of similar at-risk children with behavioural problems can have detrimental consequences on classroom learning (Caldas & Bankston, 1997). Not only is the learning environment less stimulating and conducive to learning for all pupils in these situations, but the pupil may have their poor behaviour reinforced, rather than compensated, by peers acting in similar ways (Conduct Problems Prevention Research Group, 2010).

1.6 Chapter summary

This summary provides an overview of the main sections detailed in this chapter on socio-economically disadvantaged children; defining, measuring and the reasons why they may be at risk of poorer outcomes.

- An overview of concepts key to the thesis were outlined, including definitions of the complex ideas of ‘risk’ and ‘mental health and well-being’. The idea of developmental cascades – the impact mental health can have on academic performance, and vice versa – was also discussed.
- Definitions of socio-economic disadvantage were also explored. Additionally, complexities associated with measuring socio-economic status were discussed, with a review of a range of measures used within the literature base. Limitations in using eligibility for FSM were also outlined, with justification for use as a measure of socio-economic disadvantage in the current study.
- Additionally, the risks for children from socio-economically disadvantaged backgrounds were highlighted. A review of the literature examining the impact of socio-economic disadvantage on both mental health and academic outcomes was also included, drawing connections between the two outcomes.
- An overview of why risks might occur for children from socio-economically disadvantaged backgrounds was explored, including a review of three models proposed as explanations. The contributory factor of school level disadvantage was also examined.
- Chapter 1 aimed to provide definitions critical to the present study, as well an investigation into the mechanisms of why children from socio-economically disadvantaged backgrounds are at risk of poorer outcomes. This sets the foundation for examining the potential role of resilience in improving outcomes in Chapter 2.

Chapter 2:

What is resilience, and how can it be developed?

2.1 Introduction to chapter

This chapter introduces the concept of ‘resilience’ pertinent to the current study. Section 2.2 highlights issues with definition and process, and outlines the four waves of resilience research which have taken place since resilience was first studied. Following this, section 2.3 provides an outline of protective processes, including the three key models of resilience (compensatory, challenge and protective factor models) which allows for a full understanding of how these processes function in order to moderate the effects of risk. After this, section 2.4 explores the individual and contextual protective factors and processes which may contribute to building resilience against risk, based on previous research. Finally, section 2.5 examines the need for intervention as prevention, in order to foster resilience and reduce the effects of risk, including the use of school-based interventions, such as social and emotional learning (SEL) programmes, a key focus of the current study.

2.2 Introduction to resilience

2.2.1 Defining resilience

While understanding that risk factors are a part of life, it is also important to consider what can be done to counter their consequences. Early research on risk focused mainly on understanding the deficits that resulted, rather than how problems may be averted or outcomes improved (O’Dougherty-Wright, Masten, & Narayan, 2013). It is well known that some children develop well despite exposure to risk. An early longitudinal study, ‘Project Competence’, undertaken to understand resilience by Garnezy, Masten, and Tellegen (1984) followed around 200 children and their families over ten years, measuring stress exposure and school-based competence (academic achievement, behavioural competence and interpersonal/social competence). They found socio-economically disadvantaged children were generally less competent and more likely to display behaviour problems. However, the researchers also found that some of the children experiencing more social disadvantage were rated competent on the measures and did not display disruptive behaviours, which led them to ask the question why some children do well

despite adversity. Rutter (1985) found that in a sample of individuals who grew up in adversity (e.g. parenting problems, parental mental health problems) around half did not have the same problems in their adult lives. The Kauai Longitudinal Study, which monitored the development of 698 children, born on the Hawaiian island of Kauai, periodically throughout their lives from age 1 to 40, found that although 201 children were identified as being at risk during infancy, approximately one third went on to lead successful lives into adulthood (Werner, 1993). This capacity to cope with adversity, and even do well, is the foundation of resilience. Resilience has been broadly defined as “good outcomes in spite of serious threats to adaptation or development” (Masten, 2001, p.228).

2.2.2. Four waves of research into resilience

Research into resilience has developed through four major waves (Masten, 2007; O’Dougherty-Wright et al., 2013). These waves highlight the development and progression of ideas around resilience – each wave should not be considered discrete, but rather building on previous ideas, as research progresses, to increase understanding of resilience. The first wave of resilience research focused on the individual, specifically traits and qualities that were seen in individuals who appeared to function well despite suffering past or present adversity. Pioneering investigators were motivated by individual cases of resilience, and also by the variability of outcome among individuals who were at increased risk of poor outcomes due to poverty, trauma or parental psychopathology (Masten, 2011). This first wave of research was descriptive and aimed to identify what made the difference between an individual who thrived despite risk, and their counterparts who did not. Early researchers tended to consider these children who functioned well despite the odds as “invulnerable” and focused on their personal traits and characteristics (O’Dougherty-Wright et al., 2013).

As research developed, and there was an increased understanding of the interplay of risk and protective processes over time, and involving more than just individual characteristics, more dynamic terms such as stress-resistance and resilience were used (O’Dougherty-Wright et al., 2013). There was also development of understanding what resilience actually means and how it can be assessed. Masten (2001, p.2) suggests that resilience is an “inferential and contextual construct” which requires two judgements to be made. The first is the presence of *adversity*: there must be some demonstrable risk present that is a threat to development and associated with higher probability of poor outcomes (e.g. socio-economic disadvantage). The second is *positive adaptation*: an inference regarding whether the quality of adaptation or outcome is assessed as being

“good”. This is usually defined in terms of behaviourally evident social competence, or success at meeting developmental expectations for children of similar backgrounds, age and gender (Luthar & Zigler, 1991; Masten, Best, & Garmezy, 1990; Masten & Coatsworth, 1998). Among young children, developmental competence may be considered with regard to attachment to primary caregivers, and among older children it may be defined in terms of aspects of school-based functioning, for example through peer relationships and academic performance (Luthar & Cicchetti, 2000).

However, the measurement of resilience can be a contentious issue due to the complexities of the indices used to assess positive adaptation (O’Dougherty-Wright et al., 2013). This debate regarding the criteria on which resilience can be judged continues to the present day. For example, some children may be considered to have good adaptation with regards observable behaviours, such as peer relationships and academic attainment, while still suffering internal symptoms of distress. This leads to the question of whether these children can be considered fully resilient (Luthar & Cicchetti, 2000). O’Dougherty-Wright et al. (2013) argue that resilience does not mean that the individual is completely unaffected by the adversity. It has been suggested that resilience is not a universal construct or static state. Ackerman, Brown, and Izard (2003) conducted a longitudinal study which examined the continuity and change in levels of externalising behaviour in school of socio-economically disadvantaged children. They found that home life instability was associated with change in the children’s behaviours from grade 7 to grade 9, with some improving and some deteriorating. As the children’s circumstances changed, so did their adaptation to their situation, which in turn impacted on their externalising behaviours. Furthermore, a child can show resilience in one aspect (e.g. academic achievement) whilst still experiencing psychological problems (O’Dougherty-Wright et al., 2013; Zimmerman & Arunkumar, 1994). In their longitudinal study, Luther et al (1993; 1991) found that some children who did not display external behaviour problems after exposure to risk, which usually predicts adolescent problems such as drug use and delinquency, still reported internalising problems (i.e. anxiety). They suggest that highly stressed children who showed control over their external behaviours were vulnerable to emotional distress over time (Luthar, 1991). Furthermore, high social competence is not always the most accurate indicator to use to define positive adaptation; the simple absence of emotional or behavioural problems may also be appropriate (Luthar, Cicchetti, & Becker, 2000; Rutter, 1999). Given the above, the current study examines both internalising and externalising outcomes, in addition to pro-social behaviour and academic attainment, such that a range of indices of positive adaptation are addressed.

The second wave of resilience research attempted to move beyond describing the characteristics associated with resilience, and explore the processes which might explain why some individuals are seen as resilient despite being subjected to risk (Masten, 2011). Research into resilience developed as a way of understanding how some people escape the negative effects of risk factors, and the mediating and moderating processes that explain the links between adversity and developmental competence (O'Dougherty-Wright et al., 2013). While an understanding of individual traits which may act as protective factors is still significant, research developed to increased emphasis on the contextual factors, including the developing role of relationships, and integration of changing biological, social and cultural factors which impact on resilience (Charney, 2004; Cicchetti, 2010; Masten, 2007, 2011). Examining the wider context helps alleviate some of the issues with viewing resilience **only** as an individual trait. These issues include potentially undermining the adversity that an individual has experienced, and concluding they are somehow missing some key quality that should allow them to cope with the situation, which may lead to inadvertent blame of the individual (Luthar & Cicchetti, 2000; O'Dougherty-Wright et al., 2013; Reynolds, 1998). Moreover, the holistic and contextual view of resilience allows consideration of the multiple systems of interactions, including family, school and community that influence an individual's development. It is, therefore, important to consider the complexities of how an individual interacts with a variety of systems at different levels over time. The increased understanding of resilience as both individual and contextual allowed for a more holistic understanding of the protective factors which may buffer against adversity. Furthermore, caution is taken over making generalisations regarding risk and protective factors from one context or period of development to another (O'Dougherty-Wright et al., 2013).

An ecological, transactional systems approach to understanding resilience has, therefore, allowed a shift from the original focus on individual traits and characteristics only, to a contextual focus including family and community networks (Luthar, Cicchetti, & Becker, 2000; Masten & Obradovic, 2008). This approach combines transactional (Sameroff & Fiese, 1989) and ecological perspectives on development (Bronfenbrenner, 1979) to understand the complex interactions and transactions of environment (such as growing up in poverty) and the associated issues (e.g. parental mental health, parental occupational outcome) on adaptational outcomes (Felner & DeVries, 2013). This has allowed a shift, from considering characteristics which allow a child to be resilient, to understanding resilience through examining bidirectional connections between the individual and their

context, and understanding the processes that alter children's transactions with adverse circumstances (O'Dougherty-Wright et al., 2013; Sanders, Munford, & Liebenberg, 2012). This is significant in considering the resilience of children from socio-economically disadvantaged backgrounds as context, associated risk factors and individual experience play a key in both risk and resilience aspects. Furthermore, it is important to examine resilience through an approach which reflects both an awareness of the variable nature of socio-economic disadvantage and that may guide action for affecting resilience in different contexts (Felner & DeVries, 2013).

Although waves one and two have a large bearing on the current study in the consideration of individual and contextual aspects of resilience, the third wave of resilience research is particularly pertinent. The third wave of research moved to using the understanding of resilience characteristics and processes (both individual and contextual) in order to inform practice, prevention and policy efforts in developing and promoting resilience (O'Dougherty-Wright et al., 2013). Initially, investigators in this third wave translated the previous work into resilience research into developing theory based intervention designs. This subsequently progressed into randomised controlled trials which analyse explicit change in at-risk groups after receiving a resilience enhancing intervention (O'Dougherty-Wright et al., 2013). These multifaceted intervention studies aim to reduce the risk of poor outcomes, such as problem behaviours, and foster favourable outcomes in developmental tasks (Greenberg et al., 2003; Reynolds & Ou, 2003). Luthar and Cicchetti (2000, p.1) highlight that "utilisation of the growing knowledge base on resilience can be vital in guiding social policies to promote the well-being of disadvantaged, high-risk individuals in our society". Previously, mental disorder was treated reactively, in an attempt to repair existing problems, which creates an economic burden. Moreover, as highlighted in Chapter 1, mental health problems can lead to a variety of negative outcomes, and do not allow individuals to lead fulfilling and productive lives (Luthar & Cicchetti, 2000). Therefore, it is more useful to foster resilience proactively in early development in order to prevent, or buffer the effect of, mental health problems and reduce the negative impact on other outcomes (Cowen, 1991, 1994; Luthar, Cicchetti, & Becker, 2000). This is particularly relevant to the current study, which examines how resilience might be developed through social and emotional learning (SEL) intervention programmes. This will be discussed further below in section 2.5, with more in depth discussion of the specific SEL programme utilised in the current study in Chapter 3.

The fourth wave of research takes more of a molecular and neurobiological/behavioural focus – examining multilevel dynamic processes linking genes, brain development, behaviour and context (O’Dougherty-Wright et al., 2013). Analyses into this area of resilience research uses up-to-date methods and technology, combining a variety of disciplines, including biology, neuroscience and engineering, in order to examine aspects such as gene expression, brain structure and function and social interactions. Although this is an exciting development in the field of resilience research, this aspect is beyond the scope of the present study and therefore will not be focused on.

2.3 Protective factors and processes

When researching resilience, the key focus is to identify protective factors that “might *modify* the negative effects of adverse life circumstances, and, having accomplished this, in identifying *mechanisms* or *processes* that might underlie associations found” (Luthar & Cicchetti, 2000, p.858). Protective factors are those which increase resilience or enhance an individual’s capacity for resilience and moderate the impact of risk on adaptation (Harvey & Delfabbro, 2004; Institute of Health Equity (IHE), 2014; O’Dougherty-Wright et al., 2013). Understanding and identification of protective factors is imperative for prevention research. The first two waves of resilience research, examining both individual and contextual factors inform this third wave of research by highlighting protective factors at both levels which may enhance resilience. As Benard, (2002, p.269) highlights “the potential for prevention surely lies in increasing our knowledge and understanding of reasons why some children are not damaged by deprivation.” However, this is a task easier said than done. Masten (2007, p.2) note, early research into resilience would have to include the “scope of the phenomena encompassed by the broad umbrella of resilience, the complexity of human lives, and the imprecision in many of the concepts, measures, and analytic methods available.”

Previous research has highlighted a variety of protective factors that have been shown to be important for so-called resilient children. As seen in Chapter 1, risk factors are indices that exacerbate the negative effects of the risk condition. Protective factors are those that modify the effects of risk in a positive direction. Protective factors can originate from multiple levels of influence (on both an individual and contextual level), including the community, family and the individual (Luthar et al., 2000; Zolkoski & Bullock, 2012). Before examining the range of protective factors that have been identified in resilience

research, it is important to first consider models that have been developed to explain *how* these factors may moderate the effects of risk.

2.3.1 Models of resilience

Three key resilience models have been proposed in order to explain how individual, social and contextual factors function in order to reduce the negative effects of risk (Garmezy et al., 1984). The three models proposed are: the compensatory model, the challenge model and the protective factor model. The protective-stabilising model and protective-reactive model have also been suggested as developments of the protective factor model (Luthar et al., 2000). As detailed in section 2.2.2 above, waves one and two of resilience research examined protective factors which develop resilience, both at an individual and also at a contextual level, while wave three focused on using the understanding from this research to develop preventative intervention. The models of resilience described below link to this broader understanding of resilience, since these models propose ways that protective factors are developed and risk factors mitigated for a positive impact on the outcome. Section 2.5 provides more detail about preventative intervention as a way to enhance protective factors and mitigate risk factors, focusing on SEL programmes, which are the emphasis of the current thesis. The proposed models of resilience will be discussed in more detail below.

Compensatory model

The compensatory model sees resilience as a factor that “neutralises exposures to risk” (Ledesma, 2014, p.2). This model posits that risk factors and compensatory factors independently contribute to outcomes and do not interact with each other (see Figure 2 below).

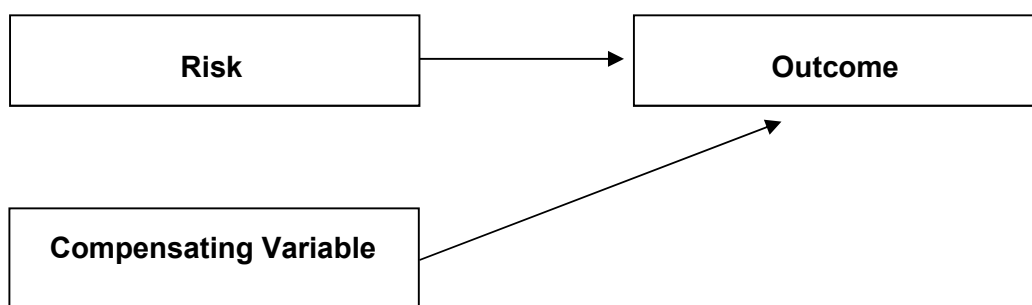


Figure 2: Compensatory model (adapted from Zimmerman & Arunkumar (1994).

In this model, for example, if stress is taken as a risk factor and self-esteem as a compensatory factor, these two factors both impact on the outcome. The effect on the outcome is jointly influenced by the changing levels of these independent variables

(Zimmerman & Arunkumar, 1994). In this example, higher levels of self-esteem compensate for higher levels of stress exposure. Thus, children with high self-esteem and high stress exposure maintain a level of competence and compare similarly to children with low self-esteem and low stress exposure (Masten et al., 1988). Relating this model to outcomes for those children experiencing socio-economic disadvantage, compensatory variables may counteract the risk factor of low socio-economic status and associated risk factors, such as harsh parenting (more detail about associated risk factors in section 1.5). However, children who experience socio-economic disadvantage may not have the necessary compensating variable – for example, children from low SES backgrounds often experience low self-esteem (Twenge and Campbell, 2002).

Challenge model

The Challenge model theorises that the association between risk factors and outcomes is curvilinear (Fergus & Zimmerman, 2005). In this model, risk may be a potential enhancer of successful adaptation at a moderate level; however, high and low levels of exposure to a risk factor can be associated with poor outcomes (Fergus & Zimmerman, 2005). For example, a little stress may not be challenging enough to allow the individual to build up resilient strategies and too much stress may be too much for an individual to cope with. However, moderate stress may provide the individual opportunities to problem solve and develop coping strategies that, when overcome, strengthen competence and allow them to face the next challenge (see Figure 3 below) (Zimmerman & Arunkumar, 1994). Rutter (1985) suggests that experience develops resilience, in that skills and strategies are developed through prior experience which then allows the individual to better deal with a similar situation in future. This process has also been called “inoculation” in that resilience against stress may be best provided through moderate exposure to stress in order to develop successful coping or adaptation; however, too much stress may increase vulnerability and have an adverse effect (Rutter, 1987).

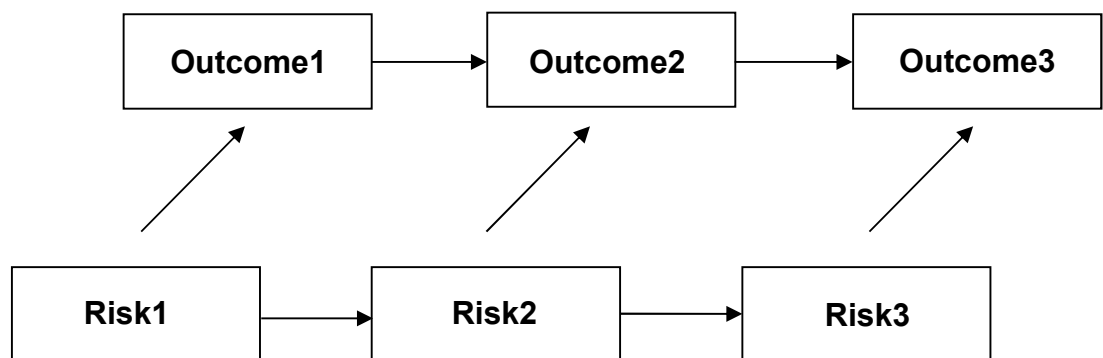


Figure 3: Challenge model (adapted from Zimmerman & Arunkumar (1994)).

With relation to children who experience socio-economic disadvantage, coping strategies or other protective factors may allow children to overcome or cope with the hardships they face, which may equip them to deal with adversity in future.

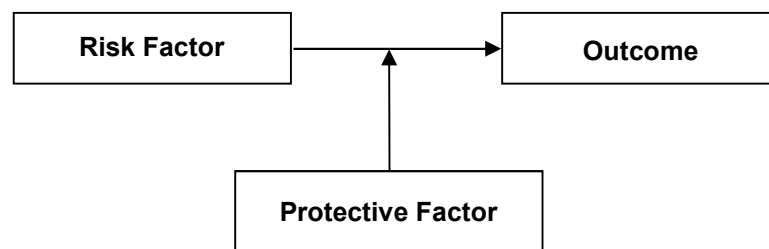
Protective factor model

A protective factor interacts and moderates risk factors and reduces the chance of a negative outcome, while also modifying the response to a risk factor (Zimmerman & Arunkumar, 1994). This model posits that a protective factor may have a direct effect on an outcome, but its effect is strongest in high-risk situations over low-risk situations. The presence of a stressor resulting from risk may increase the impact of the protective factor on the outcome. Garmezy et al., (1984) describe the protective factor model as an immunity-versus-vulnerability model, in that the presence of protective factors acts as a kind of “immunity” against stress. They also note that this works both ways and the presence of risk factors also increases the impact of stress and increases the negative impact on outcomes. Interaction effects are fundamental to resilience research as protective factors are context specific, with minor effects in the absence of adversity and strong effects when risk factors are present (Luthar, Cicchetti, & Becker, 2000; Roosa, 2000). The protective factor model underpins the approach taken in this thesis. It fits well with the idea of intervening to foster resilience (outlined in wave three) in children whose exposure to poverty place them at risk. Using universal preventive intervention, to develop key competencies and positive environments as protective factors that can buffer the negative effects of risk, aligns closely with the principles of the protective factor model. Further discussion around the development of individual competencies as well as developing positive contexts is detailed more in section 2.4 below. The protective factors which are aimed to be developed in the current study are detailed in section 3.5 in the following chapter.

Two processes, *Risk/protective* and *protective/protective*, have been detailed to outline the mechanisms of protective factors on impacting outcomes (Brook, Brook, Gordon, Whiteman, & Cohen, 1990). A risk/protective variable fulfils the purpose of mitigating the negative effects of risk (see Figure 4A below). The interaction of risk and protective factors establishes a balance between individual factors and contextual factors to lessen the likelihood of a negative outcome (Zimmerman & Arunkumar, 1994). For example, Lewandowski et al., (2013) found that high self-esteem (protective factor) in children of depressed parents (risk factor) significantly reduced the predictive effect of future mental health problems.

A protective/protective variable is a protective factor that works to enhance another protective factor which has a positive impact and decreases the likelihood of negative outcomes (see Figure 4B below). For example, Hughes, Wu, Kwok, Villarreal, and Johnson (2012) found that children, at risk from academic failure, benefited from the perception of their teacher as supportive and showing warmth. This positive perception impacted favourably on their academic effort in the classroom and confidence in their abilities, which in turn contributed to academic achievement. This is encouraging for the present study as it may be that the beneficial impact of undertaking a SEL programme may build core competencies, such as self-esteem, which will in turn have a positive effect on the outcomes of mental health and academic attainment. This will be examined in more detail in the next chapter (section 3.3.2) via the CASEL (2007) SEL logic model.

A. Risk/Protective



B. Protective/Protective

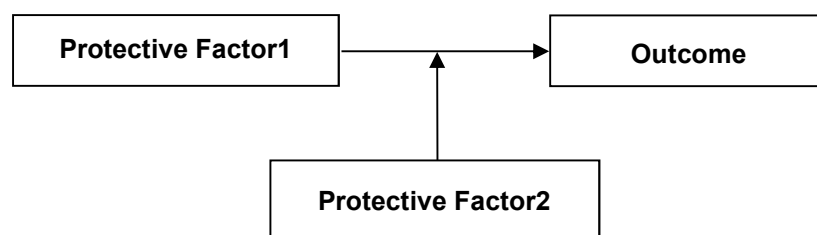


Figure 4: Protective factor model (adapted from Zimmerman & Arunkumar (1994)).

The development of protective factors, and the processes involved, on both an individual and contextual level will be discussed in the next section.

2.4 Developing protective factors - individual traits, contextual characteristics, or both?

As seen earlier in Chapter 2, initial research (the first wave) into resilience placed a strong emphasis on individualism, focusing on personal traits and characteristics of so-called resilient children, such as high self-esteem or autonomy (Luthar, Cicchetti, & Becker, 2000; O'Dougherty-Wright et al., 2013). Later approaches (the second wave) examined the links between individual characteristics and their environments (O'Dougherty-Wright et al., 2013). The interplay between these two factors seems to be the optimum for developing resilience (Benzies & Mychasiuk, 2009). Moreover, there is much scope for intervening in order to develop both individual and contextual characteristics in order to develop resilience and reduce the potential for negative outcomes, including mental health problems (the third wave). Intervention as a way to develop protective factors and enhance resilience is discussed in further detail in section 2.5.1, with a rationale for social and emotional learning (SEL) (which is the focus of the current study) included in section 2.5.2. The next section examines a range of individual and contextual factors that have been established as important in developing resilience. Given the focus of this thesis, particular attention is paid to those factors that may be promoted through SEL interventions.

2.4.1 Individual characteristics

In his early resilience research, Rutter (1987) highlighted the individual variations in response to risk. He suggested that resilience may be a combination of self-efficacy, ability to cope with change and social problem-solving skills. Further research has shown that children who can be considered resilient usually exhibit a number of personal characteristics, including high self-esteem, good self-control, empathy, problem-solving abilities, optimism, the ability to seek out mentoring relationships and reflexivity (Stewart & Wang, 2012). These social-psychological characteristics are broadly characterised as individual qualities, however, it is important to note that they are not fixed and have the capacity to be taught and developed, particularly within contexts which support development (Benard, 2004). For example, results from a meta-analysis indicate that it is possible to significantly improve children's levels of self-esteem and self-concept (Haney & Durlak, 1998). This is key to the current study as these attributes are fundamental to SEL and aim to be developed through explicit teaching. This will be discussed in more detail in Chapter 3 as part of the focus of the present study, which aims to explore whether there are improvements in outcomes of mental health and academic after pupils have undertaken two years of learning to develop these core competencies. Below, some of

the core skills that aim to be developed via SEL, to foster these individual characteristics, are discussed in more detail.

Social and emotional competence

Social competence usually includes ability to communicate effectively, empathy, ability to get along with others, responsiveness and prosocial behaviours (Benard, 1991). Socially competent individuals can interact successfully with others and form lasting relationships (Abelev, 2009). Research which profiled socially competent pre-school children identified characteristics, such as adaptable temperament, ability to approach new situations and good vocabulary and communication skills as being key to positive peer relationships and play (Mendez, Fantuzzo, & Cicchetti, 2002).

The ability to regulate and manage emotions has also been linked to social competence and is considered a fundamental protective factor (Abelev, 2009). This is also a core skill that SEL aims to develop. Emotions play a key social role. For example, in providing information about behavioural intentions, allowing insight into whether something is good or bad, and impact on social interactions (Gross, 1999). Therefore, it is no surprise that emotions play a key role in social competence and resilience skills. Emotional self-regulation is the ability to manage internal states and impulses (thought, affect, behaviour and attention) and promote positive moods while keeping control of negative ones that may impact on behaviour (Abraham & Huizenga, 2004; Buckner, Mezzacappa, & Beardslee, 2003). The ability to regulate emotions when faced with a stressful event or situation has been considered one of the most fundamental protective factors (Greenberg, 2006; Masten, Best, & Garmezy, 1990; Zolkoski & Bullock, 2012). Tugade and Fredrickson (2006) suggest that positive emotions can help buffer against stress. Positive reappraisal, seeing events with positive meaning and focusing on problem-solving aspects of the problem have all been found to be associated with positive affect and mental health and well-being, and the ability to rebound from negative circumstances (Folkman & Moskowitz, 2000; Tugade & Fredrickson, 2011). Buckner et al., (2003) found, in a study of 155 youths from low-income backgrounds, that self-regulation was the strongest independent predictor of resilience, measured by mental health and competence. Similarly, the ability to modify one's behaviour in order to maintain interaction with peers has also been seen as key to building positive social relationships (Mendez et al., 2002).

These characteristics have been found to be related to future outcomes. Children with lower social competence at age 4, using a range of measures to analyse multiple dimensions of competence, exhibited more internalising symptoms and externalising

behaviours at aged 10 and 14 (Bornstein, Hahn, & Haynes, 2010). Furthermore, the characteristics of social competence have been seen to buffer the effects of risk. For example, socially expressiveness, as defined in terms of popularity with peers, has been found to be a protective factor against stress (Luthar, 1991). Moreover, children who are able to develop relationships and elicit positive regard and warmth from caregivers tend to thrive better in adverse circumstances (Masten et al., 1990). Additionally, there is some evidence to suggest these positive effects last into adulthood (Goodman, Joshi, Nasim, & Tyler, 2015). Richards and Huppert (2012) found children who were considered sociable by their teachers showed positive outcomes on certain aspects as adults: low chance of mental health problems; high social engagements; and satisfaction with working life. Furthermore, in her study examining how social skills relate to unemployment in the British Cohort Study 1970, Macmillan (2013), found that extraversion was negatively correlated - more strongly than cognitive ability - with unemployment in ages 16-29. While there are issues with the way extraversion was defined – through the assumption of extroverted behaviour via items which identify no solitary behaviour – the analysis was also adjusted for a range of other factors, such as childhood personality, academic attainment and cognitive ability, so the results are promising. Similarly, through their cascade model, Masten, Desjardins, McCormick, Kuo, and Long (2010) found that self-reported and externally reported competence at work as adult was associated with peer relationships and social competence in childhood.

Problem-solving skills

Problem-solving skills involve the ability to find realistic solutions to challenges they face, rather than feeling helpless or seeking impractical solutions. SEL instruction teaches children core problem-solving skills, including identifying problems, setting goals to address a problem, considering practical and appropriate solutions for problems and evaluating the outcome (Schonfeld et al., 2014). These skills are key to developing resilience for not only school-based problems, but are also transferable to real world problems. Seiffge-Krenke (1995) suggests problem-solving is a functional coping strategy (active support-seeking, reflecting on possible solutions and concrete problem-solving action). Dysfunctional coping strategies include withdrawal and avoidance, which are ineffective problem-solving skills. These dysfunctional coping strategies are often seen in children with depressive symptoms, low self-esteem and poor social adjustment (Dumont & Provost, 1999; Seiffge-Krenke & Klessinger, 2000). Previous research has identified good problem-solving skills as a characteristic of resilient individuals. Dumont and Provost (1999) examined protective factors in three groups of adolescents: well-

adjusted, resilient and vulnerable. They found resilient adolescents had higher scores on problem-solving coping strategies than the other two groups.

Similarly, social problem-solving (SPS) skills have also been identified as an important protective factor, and significant in building positive peer relationships. SPS is the “cognitive-affective-behavioural process by which people attempt to resolve real-life problems in a social environment” (Siu & Shek, 2010, p.393). It involves using effective strategies in order to initiate friendships; seeking and offering help, attention and information; acquiring objects; and preventing others from acting in some way or another (Rubin & Krasnor, 1986). Social problem-solving skills are especially significant in school, where peer interaction and relationships are of particular importance in enhancing resilience, and effective SPS skills can have a positive impact on children’s outcomes. A number of studies have shown that SPS ability can minimise or lessen the impact of life stress on individuals, and moderate the relationship between stress and mental health problems such as anxiety (Siu & Shek, 2010), depressive symptoms (Goodman, Gravitt, & Kaslow, 1995), and can be related to positive changes in behavioural and academic adjustments measures (Dubow, Tisak, Causey, Hryshko, & Reid, 1991; Quamma & Greenberg, 1994).

Self-efficacy

Self-efficacy is confidence and belief in one’s own ability to achieve intended results and attain desired outcomes, as highlighted by Social Cognitive Theory (Bandura, 1997; Schwarzer & Warner, 2013). Self-efficacy impacts on how individual’s feel, think and act. Those with high levels of self-efficacy have been found to have faith in their own abilities during adversity, tackle problems as challenges rather than hopeless situations, show motivation and perseverance in difficult circumstances, and regulate emotions better during challenging tasks (Bandura, 1997; Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005). Therefore, it is a key protective factor when faced with adversity. Previous research has found that children who reported higher self-efficacy also reported lower depressive symptoms and dysfunctional thoughts (Possel, Baldus, Horn, Groen, & Hautzinger, 2005) and higher emotional well-being (Kvarme, Haraldstad, Helseth, Sørum, & Natvig, 2009). Similarly, an inner sense of confidence was associated with reductions in the adverse effects of socio-economic disadvantage in a sample of urban African-American youth (Li, Nussbaum, & Richards, 2007)

This is also related to the concept of autonomy - the ability to successfully direct one's life by setting achievable, yet challenging, goals, taking initiative, showing self-determination and making positive, responsible decisions (Mendez et al., 2002). Autonomy is linked to confidence in order to take control of situations. For example, children who have developed an internal locus of control, or belief that they have some control over events affecting them, are less likely to demonstrate learned helplessness and more likely to actively overcome the adverse problems (Luthar, 1991). The resilient high-risk adolescents in the longitudinal Kauai study had developed a belief that obstacles were not insuperable and they were in control of their fate. They also had a high degree of self-esteem and self-efficacy; many reported a particular skill or hobby which they showed pride in (Seccombe, 2002; Werner, 1993). High self-efficacy is also crucial for problem-solving skills too. According to the Effort-based Learning Principle, individuals think more deeply and process information harder when they are interested and believe they have the ability to solve the problem (Mayer, 1998).

2.4.2 Contextual characteristics

The shift in focus from individual to environmental has led to an ecological, transactional systems approach to understanding resilience which allows more scope for considering the importance of family and wider networks that are associated with resilience (Masten & Obradovic, 2006; O'Dougherty-Wright et al., 2013). Bronfenbrenner (1979) introduced the notion of development in context, which proposes that developmental outcomes are shaped by the interaction of a variety of biological, psychological and sociological factors in an environmental context. The environment in which a child develops is far reaching and includes family and the wider community, including school, all of which are significant in building resilience (Liebenberg et al., 2016). In the next section, emphasis will be on the school and family characteristics due to its significance within the present study and focus on enhancing resilience through school-based intervention.

Family characteristics

As discussed earlier in the chapter, the interplay between individual characteristics and context is highly significant in developing resilience. One contextual characteristic that is significant in resilience research is family. Consistent with the protective/protective model, it has been suggested that family characteristics may provide and create compensatory effects that are protective themselves, but also enhance the development of individual competencies that impact positively on outcomes, (Felner & DeVries, 2013).

A core aspect of this is a focus on parental influence and relationships as protective processes for children living in adversity. Parenting appears to play a significant role in mediating the link between life stressors and child behaviour (Masten, 2001). Effective parenting (e.g. authoritative, support, encouragement) seems to be protective with regards to antisocial behaviours (Dubow, Edwards, & Ippolito, 1997). Forgatch and DeGarmo, (1999) found that changes in parenting as a result of intervention, less coercive and more positive parenting, correlated with positive changes in child behaviour. However, disadvantaged families often include parents with their own problems, who may not be equipped to provide the necessary resources and support that children require to build resilience (O'Dougherty-Wright et al., 2013). As seen in Chapter 1, the nature of living in socio-economic disadvantage, with the large amount of day-to-day poverty-related stress hinder the type of parenting that is most beneficial to buffer children against the effects. Furthermore, sometimes the difficulty of these circumstances can lead to harsh and punitive parenting styles which magnify the risks of living in socio-economic disadvantage (Cauce, Stewart, Rodriguez, Cochran, & Ginzler, 2003). Family is obviously the most immediate care-giving environment and thus has a significant impact on the development of resilience (Brooks, 2006). However, often part of the risk for children experiencing more social disadvantage is difficult and chaotic home lives, which do not provide opportunities for developing resilience. Therefore, school based SEL programmes which develop protective factors, may be of significant importance to pupils from these types of backgrounds. Schools are well placed to deliver directed resilience building interventions as children spend a large proportion of their lives in school developing a range of academic, life and relationship skills (Liebenberg et al., 2016; Mallin, Walker, & Levin, 2013).

School-level characteristics

For children at risk, the protective process of a positive school experience can be particularly beneficial. Since as early as the 1970s there has been literature which has highlighted the power of a school to impact on the outcomes of children from at risk backgrounds (Benard, 1991). Positive school experiences have been seen to be protective and may buffer some of the effects of growing up in socio-economic disadvantage (Gilligan, 1998). Early research by Rutter and Quinton (1984) found positive school experience was associated with better occupational and marital outcomes in a group of 89 women who had been reared in residential children's homes. Empirical descriptions of the protective processes which allow some children to thrive despite growing up in

adversity have been used as the basis of applied resilience building practice in schools (Song, Doll, & Marth, 2013).

A positive school climate can be influential in fostering the development of key social and emotional competencies and have an impact on children's outcomes. School climate refers to the quality and character of school life, reflecting the "norms, goals, values, relationships, teaching and learning practices and organisational structure" (National School Climate Council, 2007, p.5). Rutter and Maughan, (2002) emphasise the importance of the ethos of a school as a major contributor in pupil outcomes. McEvoy and Welker (2000) suggest effective schools are those in which the expectations are high; there is strong senior management leadership; pupils feel safe and cared for; pupils have a sense of self-efficacy; and there is a shared vision and commitment among staff. These factors can act as protective factors and previous research has found that the school climate can impact on a range of outcomes, such as pupil self-esteem (Hoge, Smit, & Hanson, 1990), pupil behaviour (Way, Reddy, & Rhodes, 2007), pupil absenteeism (Kearney, 2008) and school achievement (MacNeil, Prater, & Busch, 2009). A positive school climate leading to school connectedness – the belief held by pupils that school staff care about them as individuals, as well as their learning - can be seen as an example of the relationship between individual and contextual protective factors. Osterman's (2000) review found relationships between pupils' sense of belonging, self-esteem, self-regulation, attitudes towards school, motivation and achievement. Furthermore, this sense of community and belonging may be of particular psychological and social value (Israelashvili, 1997; Osterman, 2000). Hagborg (1994) found that middle-school pupils with lower levels of school connectedness were more likely to be receiving counselling at school for a range of problems, including low self-esteem and peer relationship issues, than pupils with higher levels of school connectedness. A review by Maddox and Prinz (2003) also supports the associations between higher levels of school connectedness and higher levels of self-esteem/self-efficacy, academic achievement and lower level of problem behaviours. Similarly, positive school environments have been found to contribute to better student mental health (Bennett & Coggan, 1999).

Positive relationships within school can also have a beneficial effect on outcomes. The school climate is shaped by relationships between teachers and pupils, and between pupils, and is influenced by the quantity, quality and direction of these relationships (Allodi, 2010). Recurrent findings have highlighted the importance of supportive and caring relationships with teachers in pupil resilience (Chang, 2003; Liebenberg et al., 2016;

Morrison & Allen, 2007; Wentzel, 2002). O'Connor et al., (2011) found high-quality teacher-child relationships predicted low levels of externalising behaviours. While the findings were less pronounced, they also found that high-quality teacher-child relationships positively impacted on the trajectories of children who experienced high levels of internalising symptoms in early childhood. While it is difficult to ensure all confounding variables are accounted for in this type of research, O'Connor et al's inclusion of multiple related variables through the use of statistical models allowed for a less biased estimate of the effects of teacher-child relationship. Additionally, research has shown that students who prosper at school often have access to strong support networks (e.g. Martin & Dowson, 2009) and experience low levels of academic difficulty (e.g. Martin, 2013, 2014). Malecki and Demaray (2006) found that social support can act as a protective factor in the relationship between social support and academic achievement. Through regression analyses they found that social support from parents, teachers, classmates, friends and the school were significantly related to pupils' academic assessment scores. They also found that parent and classmate support was a moderating variable between socio-economic status and academic assessment. Thus, pupils from lower socio-economic backgrounds, who experienced higher support from classmate or parents, gained similar results on their academic tests to pupils from higher socio-economic backgrounds who also had higher social support. Social support can be considered a multidimensional concept, which includes the type of support received (emotional, informative) and the source of the support (peers, teachers, family) (Dumont & Provost, 1999). Findings from the Kauai Longitudinal Study found that children categorised as resilient also sought support outside their own families, relying on close friends, community members and teachers who they often used as a role model and confidant (Werner, 1993).

Using this research allows identification of key differences among schools which provide useful information for assessing, developing and sustaining positive change in school climates (Allodi, 2010). Based on this, some interventions aim to develop a positive school environment. Subsequently, these contextual factors may also be associated with developing children's individual protective factors. As seen, intervention programmes which aim to develop protective factors and reduce the potential for negative outcomes associated with risk have great potential in a preventative capacity, reducing the chance of poor outcomes before they occur. This will be discussed in more detail with reference to the aims of the Promoting Alternative THinking Strategies (PATHS) programme in Chapter 3.

2.5 Intervening to promote resilience

2.5.1 Intervention as prevention

As highlighted in the introductory section, a strong motivation for understanding naturally occurring resilience is to utilise the knowledge in order to create or foster resilience when it does not occur naturally, a key focus of the third wave of resilience research (O'Dougherty-Wright et al., 2013). In the past decade there has been a shift from deficit-focused research to proactive competence developing research in the field of resilience, which has also included fostering resilience as a preventative approach to improving outcomes for at-risk children (Masten, 2011). Prevention is now a multidisciplinary science drawing on research from different areas including psychology, education, public health, social work and psychiatry, aiming to prevent a wide range of negative outcomes, such as mental problems, school failure, violence and health-damaging behaviours (Weissberg, Kumpfer, & Seligman, 2003). Resilience has been described as “adaptive behaviour that produces positive social and health outcomes arising from the interplay of risk and protective factors.”(Fraser & Galinsky, 1997, p.265). Prevention programmes that develop from this idea have a dual focus of strengthening protective processes that enhance the development of competence and reduce the effect of risk factors (Miller, Brehm, & Whitehouse, 1998). This is underpinned by the protective factor model described in section 2.3.1 – the effect of risk factors is mitigated by the development of protective factors with a positive effect on outcomes. Section 3.5 in the following chapter outline the protective factors aimed to be developed through the Promoting Alternative THinking Strategies (PATHS) programme, the preventative intervention which is the focus of this thesis.

Preventive interventions, particularly those which target mental health problems, can be categorised in three ways: *universal interventions* include strategies that can be provided to a full population group, based on the evidence that it is likely to provide some benefit to all and reduce the probability of disorder; *selective interventions* that focus on individuals or groups who are at increased risk of developing a mental health problem and; *indicated interventions* which target high-risk individuals with detectable symptoms predictive of mental health problems (Mrazek & Haggerty, 1994). Additionally, Foxcroft, (2013) suggests a widening of the categorisation to include function (environmental, developmental and informational) as well as form. PATHS - the intervention which is the focus of the current study – is a universal intervention that is primarily developmental, but also draws on environmental aspects (this will be discussed in more detail in Chapter

3). Mrazek and Haggerty (1994) suggest that the classification of interventions allows a focus on enhancement of well-being, developing competence and self-esteem, rather than an entire focus on preventing specific psychological or social problems. Many researchers in the prevention field have widened their aim to include the general modification of emotional and behavioural problems, through developing social and emotional competence and well-being (Durlak & Wells, 1997). The importance of achieving proximal, as well as distal objectives, has also been highlighted. For example, by enhancing protective factors, such as developing key competencies which reduce problem behaviours, the risk of future negative outcomes associated with those behaviours may also lessen (Durlak & Wells, 1997). Primary or universal interventions, therefore, aim to expand the focus on preventing specific problems or existing crises to enhancing the emotional and behavioural function of the general population. This should lead to the promotion of good mental health and well-being and reduce the potential for negative outcomes associated with mental health problems (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004).

A number of interventions have been studied and found efficacious in reducing symptoms of mental health problems, promoting social-emotional competence, preventing delay of cognitive development and increasing readiness to learn (Anderson et al., 2003; Domitrovich et al., 2007; Greenberg, Domitrovich, & Bumbarger, 2001). The delivery of school-based preventative interventions is logical given the amount of time spent at school by children, the importance of socialisation and relationships in a school setting, and the association between academic achievement and mental health problems (Domitrovich, 2010). One type of intervention that may be useful in promoting protective factors and decreasing the effect of risk factors is Social and Emotional Learning (SEL) which will be discussed further in the following section.

2.5.2 Social and Emotional Learning (SEL)

Luthar and Cicchetti (2000) highlight the need to develop interventions which “effectively harness empirically identified protective processes” (p. 875). One facet of resilience, social and emotional competence, has gained prominence over the years and has been defined as “the ability of children to successfully interact with other children and adults in a way that demonstrates an awareness of, and ability to manage, emotions in an age- and context-appropriate manner.” (LeBuffe, Ross, Fleming, & Naglieri, 2013, p.45). According to Domitrovich et al., (2007), in order to prevent mental health problems developing in childhood, a key focus of interventions needs to be on both reducing

children's aggressive, disruptive and withdrawn behaviours, and also developing their social and emotional competence. This important competence acts as a protective factor, developing their resilience and therefore defending children from negative effects of risk and adversity.

One process which aims to develop key skills for life, including the development of protective factors, is Social and Emotional Learning (SEL). SEL combines competence promotion and youth development frameworks in order to reduce the negative impact of risk, and enhance protective factors for positive adjustment (Catalano et al., 2004; Guerra & Bradshaw, 2008; Weissberg et al., 2003). SEL has been defined as “the capacity to recognize and manage emotions, solve problems effectively, and establish positive relationships with others” (Zins & Elias, 2007, p.3). Through explicit teaching, SEL programmes aid the process of developing and applying the knowledge and skills necessary to identify and manage emotions, develop empathy for others, make responsible decisions, build positive relationships and problem solve (Collaborative for Academic, Social and Emotional Learning, 2005; Zins & Elias, 2007). There are five core proximal cognitive, affective and behavioural competencies that are SEL programmes aim to develop: self-awareness, self-management, social awareness, relationship skills, and responsible decision making (Collaborative for Academic Social and Emotional Learning, 2005).

Pupils who undertake rigorously designed, well-implemented SEL programmes have been seen to demonstrate more positive social behaviour, and are less-likely to engage in disruptive or antisocial behaviour (Ashdown & Bernard, 2011). Durlak, Weissberg, Dymnicki, Taylor, & Schellinger (2011) conducted a meta-analysis of 213 school-based studies examining the outcomes of universal SEL programmes. They found that pupils who undertook well-implemented SEL programmes showed increased social and emotional skills; improved attitudes towards self, school and others, decreased behavioural problems and improved academic attainment, compared to pupils in control groups. Similarly, in their meta-analytical review of 75 studies on universal social, emotional and behavioural programmes, Sklad, Diekstra, Ritter, and Ben (2012) found positive effects on a number of outcomes. These outcomes included enhancement of social and emotional skills; positive self-image; prosocial behaviour; prevention of antisocial behaviour and mental health problems; and promotion of academic achievement. The largest effects were found for social-emotional skills, pro-social behaviour and academic achievement. It is noted that more than half of the studies

reported only post-test data collected less than 6 months after the intervention ended, so conclusions about lasting effects of these programmes must be made with caution. The findings of Sklad et al., (2012) are supported by a meta-analysis conducted by Wigelsworth et al., (2016) who found similar impact, with the largest differences post-participation in universal SEL, seen in outcomes measuring behaviour (e.g. pro-social and conduct problems). These effects were maintained in a very recent meta-analysis by Taylor, Oberle, Durlak, and Weissberg (2017), who found school-based SEL interventions continued to demonstrate significant, positive benefits in seven outcomes. Overall, these findings on the effects of SEL programmes are very promising.

Children who are at-risk may gain increased benefit from SEL programmes (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999; Holsen et al., 2009). Indeed, this is a core proposition in SEL programme theory (Humphrey, 2013). Nonetheless, despite the theoretical plausibility of this ‘differential gains’ hypothesis, there has been only limited empirical verification to date, particularly in relation to risk associated with socio-economic status (SES). In a recent meta-analysis of over 200 studies of universal SEL interventions, Durlak et al (2011) reported that nearly one-third of studies failed to include any information on SES, and those that did typically failed to incorporate it in their analyses. They also highlight the importance for subgroup analyses which may “determine if certain participant characteristics are related to differential program benefits. For example, factors such as ethnicity, developmental level, socio-economic status, or gender may influence who receives more or less benefit from an intervention” (p.419). A rare study by Holsen et al (2009) found significantly greater improvements in social competence, satisfaction with life and school performance among Norwegian children from low (as compared to high) SES backgrounds following exposure to the Second Step programme. While it is possible that such findings are due to a ceiling effect in baseline measures of children from high SES backgrounds, the results are encouraging, but more research in this area is required.

The school-based universal SEL programme Promoting Alternative THinking Strategies (PATHS) and the protective factors that it aims to enhance through explicit teaching, which is the focus of the current study, will be examined in detail in the following chapter.

2.6 Chapter summary

This summary provides an overview of the main sections detailed in this chapter on resilience, and how it may be developed through preventative intervention.

- A definition of resilience was presented, as well as an overview of the four waves of resilience research, which allow for an understanding of the development of this field and its significance for the present study.
- An outline of protective factors and processes was also included, in order to identify key protective factors which may buffer the effect of risk associated with socio-economic disadvantage.
- Models of resilience were presented, with the protective factor model highlighted as the most relevant to the approach taken in the current study and the link with universal preventative intervention.
- An overview of the role of individual traits and contextual characteristics that have been found to act as protective factors was provided. These were presented as relevant to the current study: highlighting individual traits that can be developed through explicit teaching and contextual factors that are significant to school based interventions.
- Methods to promote resilience, particularly via preventative interventions, were explored. There was a specific emphasis on social and emotional learning, due to its significance in the present study.
- Chapter 2 aimed to outline the mechanisms through which resilience can be developed in order to promote protective factors and buffer the risks of adversity. The link between this and universal school-based social and emotional learning was made, in preparation for Chapter 3, which examines the intervention used in the current study.

Chapter 3:

Enhancing resilience through the Promoting Alternative THinking Strategies (PATHS) programme

3.1 Introduction to chapter

As the previous chapter showed, resilience is a complex construct which is influenced by individual and contextual processes. As the third wave of research into resilience outlines, there have been moves to enhance resilience through intervention, one of which is universal Social and Emotional Learning (SEL). This chapter introduces the universal SEL programme ‘Promoting Alternative Thinking Strategies (PATHS)’, which is the focus of this thesis. Section 3.2 outlines PATHS in more detail, in order to provide a full understanding of the programme. Following this, section 3.3 examines the theory that supports PATHS, which also provides a theoretical framework for the current study. After this, section 3.4 includes a table outlining previous research on PATHS, providing an evidence base which supports its use in the current study. Finally, section 3.5 details the practical aspects and underlying mechanisms of PATHS which may contribute to improving outcomes, enhancing resilience for children at-risk. The final section 3.6 provides a summary of the chapter.

3.2 What is Promoting Alternative THinking Strategies (PATHS)?

The previous chapter examined the idea of developing resilience through intervention. One way that core competencies and skills, which act as protective factors, may be developed is through explicit SEL teaching. An example of this type of programme is the Promoting Alternative THinking Strategies (PATHS) curriculum (Greenberg, Kusche, Cook, & Quamma, 1995). PATHS was originally developed as an intervention for use with deaf children in the United States (Greenberg & Kusche, 1998), but has since been utilised as a universal social and emotional learning intervention for all children in a class/school. PATHS was chosen for the initial trial as an intervention with a strong previous evidence base, which also fits the four recommended practices identified via meta-analysis of school-based universal interventions which are seen as key to effectively developing pupils’ skills (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011).

These four practices are also known by the acronym S.A.F.E. and include:

“Sequenced: Does the program apply a planned set of activities to develop skills sequentially in a step-by-step fashion?”

Active: Does the program use active forms of learning such as role-play and behavioural rehearsal with feedback?

Focused: Does the program devote sufficient time exclusively to developing social and emotional skills?

Explicit: Does the program target specific social and emotional skills?”

(Durlak et al., 2011, p.410).

PATHS specifically was chosen as the focus of the current study for a variety of reasons. It is a universal, school-based SEL intervention, with a strong international evidence base (see section 3.4). Furthermore, it is one of only 15 intervention (and only 1 of 2 SEL interventions), in a review of over 800, to be categorised as a “model programme” by the Center for Study and Prevention of Violence, due to strong evidence of its efficacy, sustained effects and replicability (Centre for the Study and Prevention of Violence, 2011). Although, as a universal intervention, the PATHS programme is not specifically designed for children who experience more socio-economic disadvantage, it has a strong evidence base in improving a range of outcomes overall, with some previous evidence that demonstrates positive effects for children affected by poverty (e.g. Conduct Problems Prevention Research Group, 2010; see section 3.4 for a review of PATHS evidence-base). While previous literature examining the effect of PATHS on this sub-group of children is sparse, the development of key protective factors through SEL should theoretically buffer the effects of adversity, as per the protective factor model (outlined in section 2.3.1; key protective factors developed by PATHS detailed below in section 3.5). A further benefit of the PATHS programme, is that it has been anglicised for a UK audience, reducing cultural transferability issues.

In order to clearly and effectively describe an intervention, Hoffmann et al., (2014) have proposed a “Template for Intervention Description and Replication (TIDieR)’ checklist and guide, which has been used to outline the PATHS curriculum below.

1. Brief name

Promoting Alternative THinking Strategies (PATHS)

2. Why

As discussed previously in Chapter 2, interventions can provide opportunities for developing resilience as a preventative measure. PATHS is a comprehensive programme for enhancing social and emotional competencies which act as protective factors and improve adjustment. As identified by the Collaborative for Academic, Social, and Emotional Learning (CASEL) five groups of inter-related core social and emotional competencies that should be covered by SEL programmes, such as PATHS, are: self-awareness, self-management, social awareness, relationship skills and responsible decision making (Payton et al., 2008). PATHS aims to develop these core competencies, whilst also decreasing risk factors associated with maladjustment, such as aggression and behaviour problems, in school children, and create an environment for optimal learning (Casel, 2007). PATHS is based on the Affective-Behavioural-Cognitive-Developmental model of development, which integrates, and links, affect (including emotional language), behaviour and cognitive understanding in developing social and emotional competence (Greenberg & Kusché, 1993). These models are discussed in more detail in section 3.2 below.

3. What (materials)

The PATHS curriculum consists of a series of approximately 35-45 lessons³ that cover topics such as identifying and labelling feelings, controlling impulses, reducing stress and understanding other people's perspectives. The full PATHS curriculum contains lessons for children in Reception through to Year 6, however, only the Key Stage 2 PATHS curriculum was utilised in the *PATHS to Success* trial, and hence the current study. These lessons include group/class discussions, role-playing, using/creating visual resources and representations and stories/vignettes. Jump Start catch up lessons (taken from the Year 3 pack) were provided for Years 4 and 5 in the initial year of the trial, in order to introduce key PATHS concepts for classes that had not received PATHS previously. Teachers were provided with complete manuals in order to deliver lessons. For the purposes of the trial, teachers were also provided with an implementation guide, developed by the research team, which emphasised the importance of effective implementation. Table 1 below provides an overview of the lessons undertaken by each year group, taken from the implementation guide.

³. The variation in number of lessons is due to each year group curriculum containing a different amount of lessons.

Table 1: *Suggested timetable for implementation (from PATHS implementation manual, PATHS to Success trial, 2012)*

	Year 3	Year 4	Year 5	Year 6
Unit 1	Establishing a positive Classroom environment and enhancing self-esteem (2 lessons)	Getting started (5 lessons) Jump Start lessons 1-12 in first year only (2012-13)	Getting started (8 lessons) Jump Start lessons 1-12 and Appendix A lessons (from Year 5 manual) in first year only (2012-13)	Getting back into PATHS (7 lessons)
Unit 2	Basic emotions	Feelings and relationships (15 lessons)	Problem-solving (8 lessons)	Study and organisational skills (7 lessons)
Unit 3	Improving self-control, self-awareness and anger management (4 lessons)	Making good decisions (5 lessons)	Goals and identity (4 lessons)	Conflict resolution (6 lessons)
Unit 4	Using our thinking skills (4 lessons)	Being responsible and caring for others 3 lessons)	Making and keeping friends (9 lessons)	Number the stars (7 lessons)
Unit 5	Getting along with others 1 – friendship (8 lessons)	Problem-solving (14 lessons)	Being responsible and caring for others (12 lessons)	Respect (7 lessons)
Unit 6	Feelings in relationships 1 (6 lessons)	+ 3 supplementary feelings intensity lessons	+ 2 supplementary control signals lessons	Endings and transitioning (4 lessons)
Unit 7	Getting along with others 2 (3 lessons)			+ 4 supplementary control signals and problem-solving lessons
Unit 8	Feelings and expectations (3 lessons)			
Unit 9	Feelings about school (3 lessons)			
Unit 10	Feelings in relationships 2 (4 lessons)			
Unit 11	Endings and transitions (2 lessons)			

⁴ There are no 'jump start' lessons for Year 3, as this content is already provided within this pack.

4. What (procedures)

PATHS lessons follow a consistent format which includes an introduction by the teacher (introduction to the lesson, including the topic and objectives, and recap of the previous lesson), main activity (frequently built around a story or discussion) followed by a plenary (which reiterates and reviews key learning from the lesson). Supplementary activities are also provided to further reinforce the ideas from each lesson. Pupils are encouraged to be active learners throughout the lessons and teachers are encouraged to elicit responses and clarify learning. PATHS is considered a ‘spiral’ curriculum in that lessons are: developmentally sequenced; key concepts are revisited and built on; new learning links with previous learning; and competence of skills increases with each concept reinforcement lesson.

5. Provider

PATHS is a lesson based programme designed to be included as part of a broader curriculum delivered within the classroom. Therefore, the main responsibility for delivering the PATHS lessons was given to the classroom teachers (years 3, 4 & 5 in trial year 1/years 4, 5 & 6 in trial year 2). However, other staff within the school (TAs, lunchtime supervisors, SLT) were also expected to reinforce the key learning outcomes as part of generalising throughout the school day, out with the classroom. Teachers were also encouraged to generalise the learning throughout the day within the classroom, linking cross-curricular learning with core PATHS concepts and ideas.

6. How

As discussed, PATHS is a universal intervention. This means that the curriculum was delivered to the whole class, regardless of individual need. This is in line with the previous discussion regarding preventative rather than reactive strategies to mental health problems in children. Lessons are designed to be undertaken as part of the class weekly timetable, with generalisation happening as much as possible throughout the school day.

7. Where

PATHS is a school-based intervention. Structured lessons are taught during an allocated class time, and children are encouraged to generalise the skills they have learnt, throughout the school day in and out of the classroom, and also at home. As discussed in Chapter 1, children who are growing up in low socio-economic backgrounds may be exposed to a variety of risk factors at home such as parental anxiety and stress, chaotic lifestyle and

overcrowding. Therefore, school may be best placed to develop core competencies which act as protective factors to buffer the effects of these risk factors.

8. When and how much

In implementation terms the dosage of a programme refers to how much of the original programme has been delivered, thus considering quantity delivered (in the case of PATHS, how many lessons delivered) and implementation strength (Dane & Schneider, 1998; Durlak & DuPre, 2008). PATHS is designed to be delivered via two structured 30 minute lessons per week, with generalisation activities ongoing through the week. Each year group curriculum consists of approximately 40 lessons. Teachers are able to slot the lessons into their weekly timetable as they wish, with one stipulation being that, as a universal intervention, the whole class be present for the lessons.

9. Tailoring

The PATHS programme is structured and fairly prescriptive, via a manual. Teachers are encouraged by programme developers to implement with optimum fidelity by following the programme as closely as possible, making limited adaptations. Limited adaptations, such as name/place changes in stories, are encouraged, as long as they do not change the structure, content or sequence of the lesson, and are done to facilitate pupil engagement through a sense of familiarity, ownership and context.

10. Modifications

An anglicised version of the PATHS programme (adapted by Barnardos) was used in the present study; however, the programme content remained the same, with the main changes being to spellings and phrases. Again, teachers were encouraged to stick to the programme as closely as possible and not change the content or structure of the programme.

11. How well (planned)

In order to maximise implementation effectiveness, key steps were taken. All teachers implementing the programme received one full day of initial training with a half-day follow up training four months later. Training was developed and led by PATHS Master Coaches from the Evidence-based Prevention and Intervention Support (EPIS) Centre at Pennsylvania State University (PSU). Three members of the research team (of which the author was one) then provided ongoing technical support and assistance to schools

(e.g. lesson modelling, observation and feedback)⁵. These staff were also trained and supported throughout the trial by staff from PSU.

3.3 PATHS theory

There are two key theories/model which underpin PATHS. The ABCD (affective-behavioural-cognitive-dynamic) model underpins the programme itself: what is taught and why. The logic model underpins *how* PATHS may impact positively on outcomes, enhancing protective factors and reducing the potential negative effect of risk. These two models are described in more detail below.

3.3.1 The ABCD model

The ABCD model of development, on which PATHS is based, emphasises the integration of affect, behaviour and cognitive understanding in developing social and emotional competence (Greenberg & Kusché, 1993). The ABCD model theorises that as children grow up, their emotional responses to circumstances develop ahead of their cognitive ability to process and apply effective strategies to appropriately deal with the situation. Therefore, affective development is an important starting point in developing the ability to cope with various situations, but also needs to be integrated with cognitive and linguistic functions to be fully effective (Greenberg et al., 1995; Greenberg & Kusche, 1998). Even before they begin to learn to talk, children develop a whole range of affective signals, which become automatic responses to situations and interactions that occur in their daily lives (Greenberg et al., 1995). As they grow older and develop, children learn skills to manage these emotions and also recognise them in other people as their social interaction increases. At the same time their cognitive processing skills are also developing, as well as their behavioural responses to life situations. The underlying theory of this model is that a child's coping, reflected in externalising behaviour and internal regulation is directly influenced by their emotional awareness, affective-cognitive control, and social-cognitive understanding (Greenberg & Kusche, 1998). Therefore, PATHS aims to develop skills in self-control, emotional awareness and understanding and problem solving in order to impact positively on psychopathology (Greenberg et al., 1995). Greenberg et al., (1995) explain that PATHS is based on four main assumptions, taking into account developmental theories and the ABCD model. These are:

⁵ Data for the trial was not collected by the research assistant supporting the school, in order to prevent bias.

- “There is an association between children’s behaviour and their ability to understand and discuss emotions; their behaviour may impact on their ability to understand and express emotions.
- The ability to manage, understand, and discuss emotions operates under developmental constraints and is also affected by socialisation and interaction with others.
- Children’s ability to understand their own and others’ emotions is a central factor in effective problem solving
- The school environment is a significant context and can be fundamental in change; building skills which support healthy development.”

(Greenberg et al., 1995, p.120)

These four assumptions that are the basis of PATHS link well with the idea of fostering resilience: it is vital to build key skills in these core areas of development given the protective function they serve against potential risk factors that lead to negative outcomes associated with living in disadvantage. As seen previously, children who are at risk of negative outcomes may benefit from developing skills in emotional understanding, management and expression and problem-solving skills, in order to effectively cope with living in adversity. Furthermore, these skills will allow positive relationships with others to be built, providing a support network which may also buffer some of the negative effects. Moreover, schools may be well placed to foster this development, as children living in socio-economic disadvantage may not have the chance to develop these skills fully in the home environment, as discussed in Chapter 1.

3.3.2 SEL logic model

The SEL logic model developed by The Collaborative for Social, Emotional and Academic (CASEL) underpins the aims of SEL programmes, including the PATHS curriculum, and highlights how and why outcomes may be improved through undertaking the programme (See Figure 5). This model outlines how specific components and activities of the programme aim to decrease risk factors while increasing protective factors that have been shown to predict future development. Therefore showing the relationship between core competencies developed through SEL and the improvements to a child’s success in school and life. The model highlights two fundamental aims of SEL interventions. The first is that they develop positive, well-managed learning environments, both classroom and school, in which pupils feel safe, cared for and an active part of (Casel, 2007). This is drawn from research which shows that attachment to school is strongly influenced by classroom and school climate, which in turn results in students who are more engaged and focused and subsequently more positive outcomes:

socially, emotionally and academically (Osterman, 2000; Solomon, Battistich, Watson, & Lewis, 2000). The second is that they develop pupils' core social and emotional competencies (self-awareness, social awareness, self-management, relationship skills and responsible decision making), which have been seen to act as protective factors, through instruction and active participation of the programme (Casel, 2007). A meta-analysis of 165 studies of school based prevention programs found a decrease in delinquency, conduct problems, school nonattendance and risky behaviour was linked to social competency instruction. Additionally, environmentally focused interventions, i.e. those interventions which aim to establish expectations or norms for behaviour and classroom management, were found to be most effective for reducing delinquency (Wilson, Gottfredson, & Najaka, 2001).

One limitation of this model is that SEL programmes often vary in design, with some focusing on classroom environment and some more focused on social and emotional competency instruction. CASEL highlight that few SEL programmes cover, in full, both aims of the logic model and many schools adopt a variety of approaches and activities in order to target both aspects. Domitrovich et al. (2010) highlights that a potential cause for concern may be with programs which only focus on one of the key aims may be less beneficial. However, Zins and Elias (2007) highlight that often there is a reciprocal relationship between the two aims: a positive school climate facilitates the development of social emotional competencies and SEL programs facilitate and promote a supportive, caring school climate.

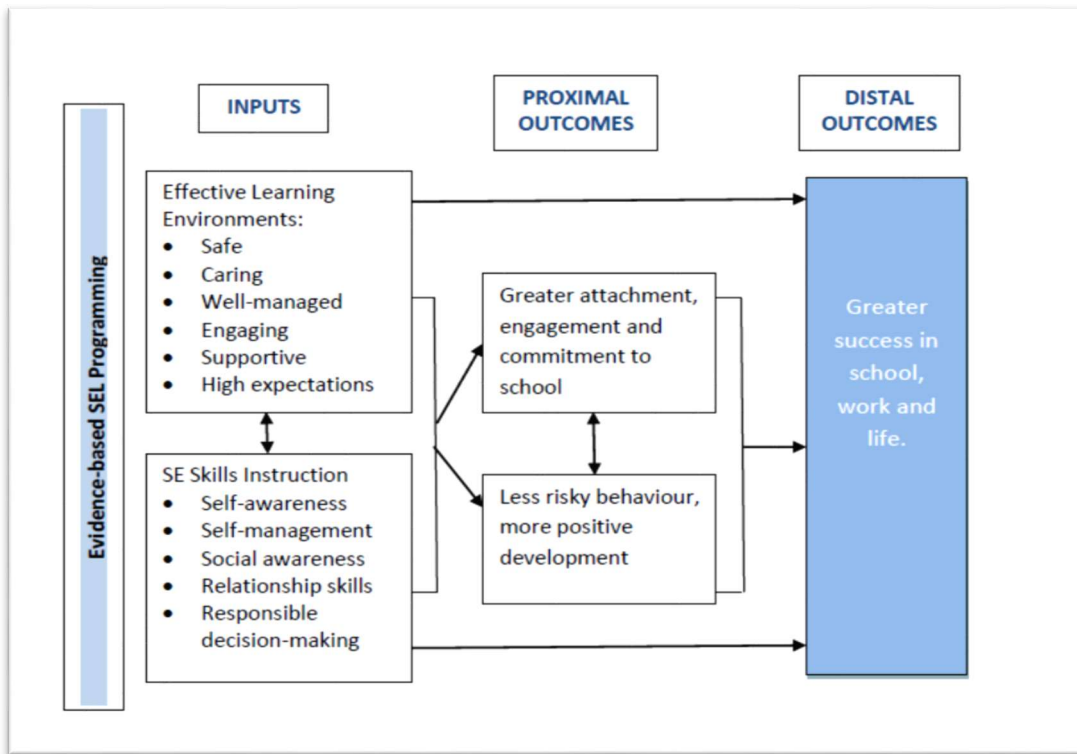


Figure 5: SEL logic model - adapted from 'How Evidence-Based SEL Programs Work to Produce Greater Student Success in School and Life' Casel (2007)

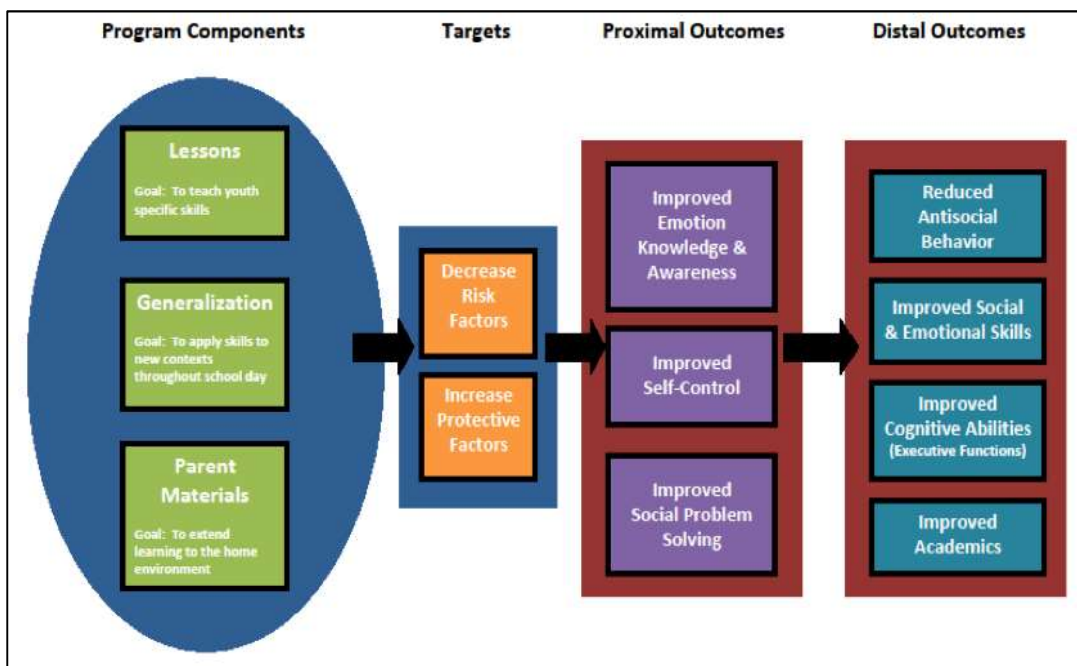


Figure 6: PATHS logic model - created by the Evidence-based Prevention and Intervention Support Center (EPISCenter) at Penn State University, 2011 – www.episcenter.psu.edu)

Based on the SEL logic model, the Evidence-based Prevention and Intervention Support Center (EPISCenter) has developed a logic model specifically for the PATHS curriculum. This provides a visual representation of the underlying rationale for the behavioural changes associated with PATHS, explaining how and why the program may be effective. Similar to the SEL logic model, the PATHS logic model outlines the core programme components which support development of protective factors and reduction of risk factors, and the proximal, and subsequent distal, outcome improvements. The link between the proximal and distal outcomes is supported by research which has found high self-control is positively associated with higher academic attainment and less anti-social behaviour (Tangney, Baumeister, & Boone, 2004). Similarly, increases in problem solving skills have been linked to improved academic adjustment (Dubow et al., 1991). The PATHS logic model (Figure 6) is relevant to the present study since it examines the relationship between undertaking the programme and distal outcomes of improvement in internalising, externalising and pro-social behaviour, and academic attainment.

3.4 PATHS evidence – prior research into the PATHS curriculum

PATHS has been well researched over the past 20 years and has yielded encouraging results in previous studies (Domitrovich, Cortes, & Greenberg, 2007; Greenberg et al., 1995). The following table summarises key research papers of PATHS.

Table 2: PATHS research papers from 1995 – present

Authors	Date	Location	Design	Age group	Sample group	Outcomes measured	Implementation data reported?	Programme Developer input?	Sub-group analyses?	Additional information
Greenberg, Kusché, Cook et al.	1995	USA	RCT	Year 3 and 4	Pupils <i>n</i> = 286 (130 intervention - 83 regular education/47 special education /156 control – 109 regular/47 special education)	Emotional understanding, vocabulary & recognition, Behavioural & emotional problems	N	Y	N	
Greenberg & Kusché	1998	USA	RCT (Wait-list control)	Year 2-6	Pupils <i>n</i> = 57 (deaf children)	Cognitive & academic skills Social & emotional understanding Behavioural & emotional functioning	N	Y	N	Pupils in control classrooms in Year 1 received PATHS in Year 2 of trial.
Conduct Problems Prevention Research Group	1999	USA	RCT (matched pair)	Year 2	Pupils <i>n</i> = 891 high risk (behaviourally disruptive) (445 intervention/446 control)	Social cognition & reading Peer relations & social competence Aggressive-disruptive behaviour Parenting behaviour	N	Y	Y (Behaviourally disruptive sample identified)	Combined with enrichment programme for parents/pupils
Conduct Problems Prevention Research Group	1999	USA	RCT (matched pair)	Year 2	Pupils <i>n</i> = 6,715 Classrooms <i>n</i> = 378 (198 intervention/180 comparison)	Classroom behaviour Cognitive concentration Oppositional and conduct problems behaviour Pro-social behaviour Emotional regulation Teacher and peer rated peer-liking measure.	Y	Y	N	As above - combined with enrichment programme for parents/pupils Only baseline measure was interview with teacher regarding

									behaviour of each child in class.	
Kam, Greenberg & Walls	2003	USA	Quasi-experimental matched-group	Year 2	Pupils <i>n</i> = 350 (164 intervention/186 comparison)	Aggression Dysregulated behaviours Attentional control Social-emotional competence	Y (Quality of implementation and HTI support)	Y	N	
Kam, Greenberg & Kusché	2004	USA	Randomised intervention trial	Year 2-4	Pupils <i>n</i> = 133 (with mental health problems and/or physical disabilities) Schools <i>n</i> = 7	Emotional vocabulary Social Problem-Solving Skills Depressive symptoms self-report Problem behaviours Social competence	N	Y	N	Pupils taught in self-contained classrooms with variable mainstreaming.
Kelly, Longbottom, Potts et al.	2004	UK	Small Pilot mixed-methods study	Year 5	Classroom <i>n</i> = 1 (plus separate analyses on 7 target pupils identified as having emotional and behavioural difficulties)	Qualitative staff reflections on PATHS Pupils' opinions of PATHS Emotional understanding/vocabulary Problematic social situations Social profiles (target pupils only)	N	Independent	N	Very small study involving only 1 class.
Riggs, Greenberg & Kusché	2006	USA	RCT	Year 3 & 4	Pupils <i>n</i> = 329 (153 intervention group/165 control group) Schools <i>n</i> = 4	IQ Inhibitory Control Verbal fluency Behaviour problems - externalising and internalising	Y (separate from main analyses - to confirm PATHS had been sufficiently delivered).	Y	N	
Curtis & Norgate	2007	UK	Quasi-experimental matched group (also	Year 1 & 2	Pupils <i>n</i> = 287 (114 intervention group/173 control group)	SDQ – emotional symptoms, conduct problems, hyperactivity, peer problems & pro-social	N	Independent	N	

			included qualitative data)		Schools <i>n</i> = 8 (5 PATHS/3 control).	Teacher reflections on use of PATHS				
Dimitrovich, Cortes & Greenberg	2007	USA	RCT (matched pair)	Nursery - Reception	Pupils <i>n</i> = 246 Classrooms <i>n</i> = 20 (10 intervention/10 control)	Emotional knowledge & vocabulary Inhibitory control Attention Interpersonal problem solving Social skills and problem behaviours Social competence	N	Y	N	Head Start classrooms used.
Conduct Problems Prevention Research Group	2010	USA	RCT (matched pair)	Years 2-4	Pupils <i>n</i> = 2937 Schools <i>n</i> = 12 (high-risk schools categorised by amount of disadvantage)	Externalising behaviours Cognitive concentration Pro-social behaviour	Y (separate from main analyses - as confirmation PATHS sufficiently delivered)	Y	Y (Individual problem behaviour/gender and school level poverty)	Longitudinal 3 year study, used Fast Track programme (approximately 80% of full PATHS curriculum).
Seifer, Gouley, Miller et al.	2010	USA	Pilot mixed-methods study	Year 2&3	Pupils <i>n</i> = 238 pupils (150 intervention/88 control) School <i>n</i> = 1 Classrooms <i>n</i> = 6	Peer nominated social status & social behaviour Emotional understanding Social status self-report Depressive symptoms Social & emotional competence	Y (qualitative perspective from teachers regarding implementation included).	Independent	N	Very small scale pilot study
Social and Character Development Research Consortium	2010	USA	RCT	Year4-6	Pupils <i>n</i> = 786 Pupils (377 intervention/409 control) School <i>n</i> =10	School outcome: Social and character development (SACD) Pupil outcome: social and emotional competence, behaviour and perception of school climate.	Y (ratings of dosage and fidelity were reported).	Independent	N	

Malti, Ribeaud & Eisner	2011	Switzerland	Cluster Randomised Sampling (school level)	Year 2	Pupils <i>n</i> = 1675 children (360 pupils in PATHS only/356 pupils control/339 pupils Triple P/306 pupils both PATHS & Triple P) Schools <i>n</i> = 56	Externalising behaviour Social competence	Y (separate from main analyses - to determine that PATHS was being implemented sufficiently)	Independent	N	Also had an experimental group which were given Triple P parental training intervention and a group which had both PATHS and Triple P. Used HLM analysis.
Ross, Sheard, Slavin et al.	2011	UK (Northern Ireland)	RCT	Year 1-6	Schools <i>n</i> = 12 (6 intervention/6 comparison – approx 700-900 pupils)	Pupil behaviour (Strengths and Difficulties Questionnaire (SDQ)/observations) Social problem solving Recognising emotions	Y (separate from main analyses – reflection on good points and areas for improvement in implementation)	Independent	N	PATHS renamed 'Together 4 All' in this context. Research report
Goossens, Gooren, Castro et al.	2012	Netherlands	RCT (Wait list)	Year 1,4 & 6	Pupils <i>n</i> = 1294 (674 intervention/620 comparison) Schools <i>n</i> = 18 (9 intervention/9 comparison)	Problem behaviour (externalising) Social experience Depressive symptoms (internalising) Peer likability Social cooperation/interaction/independence Emotional awareness & regulation Empathy	Y (level of programme completeness and implementation quality).	Independent	N	

Little, Berry, Morpeth et al.	2012	UK	RCT	Reception – Year 2	Pupils <i>n</i> = 4006 (complete data set over 3 collection points) Classrooms <i>n</i> = 196 (102 intervention/94 comparison)	Behaviour (SDQ & PATHS Teacher Rating Survey (PTRS))	N	Independent	N	Also evaluated Incredible Years programme and Triple P programme – used HIM to account for class/school clustering in outcomes
Crean & Johnson	2013	USA	RCT (matched pair)	Year 4-6	Pupils <i>n</i> = 779 (422 intervention/357 comparison) School <i>n</i> = 14 schools (7 intervention/7 comparison)	Aggression (including ideas about aggression and problem-solving) Conduct problems Acting out behaviour problems Social problem-solving Delinquency Victimisation at school	Y (separate from main analyses – to determine how well PATHS was implemented).	Independent	N	Children not exposed to PATHS below Year 4 Used data from Social and Character Development Research Consortium, 2010 study.
Honess & Hunter	2014	UK	Qualitative		Teachers <i>n</i> = 7 (delivering the PATHS curriculum) Schools <i>n</i> = 1	Teachers' perceptions of the implementation of PATHS and effects on classroom environment and implementation.	Y (qualitative data regarding teachers' thoughts about implementing PATHS).	Independent	N	
Schonfeld, Adams, Fredstrom et al.	2015	USA	RCT	Year 4- Year 6/7	Pupils <i>n</i> = 1394 pupils (692 intervention/702 control) Schools <i>n</i> = 24 (12 intervention/12 control)	Academic attainment (reading, writing and mathematics)	Y (reported “dosage effect” i.e. higher dosage, better outcomes)	Independent	N	

Hughes & Clime	2015	UK	Small mixed methods study	Nursery - Reception	Pupils <i>n</i> = 57 children (20 full PATHS/20 adapted PPATHS/17 control) Schools <i>n</i> = 3 (pre-schools)	Emotional recognition, understanding & vocabulary Behaviour (Early Years Behaviour Checklist and SDQ) Teachers' perception of PPATHS (qualitative)	N	Independent	N	3 groups (1 full PPATHS, 1 adapted PPATHS, control)
Berry, Axford, Blower et al.	2015	UK	RCT	Year 1- Year 2	Pupils <i>n</i> =5074 Schools <i>n</i> =56 (29 PPATHS/27 control) 183 classes)	Mental health outcomes (SDQ) PPATHS Teacher Rating Scale (PTRS) Behaviour (observations) Child/Teacher behaviour (Teacher-Pupil Observation Tool (T-POI))	Y (Found no relationship between fidelity and treatment effects)	Independent	N	Data taken from same trial as Little et al. (2012) above.
Novak, Mihic, Basic & Nix	2017	Croatia	RCT	Year 3- Year 4	Pupils <i>n</i> =668 Schools <i>n</i> =57 (29 PPATHS/27 control)	Prosocial behaviour Emotion regulation Learning behaviour Externalising behaviours Internalising symptoms	N	Independent	Y (high/low risk children identified)	

As Table 2 shows, there have been numerous studies examining the effectiveness of PATHS. One of the first studies involving 286 children in grades 2 and 3 in the USA (Year 3 and Year 4 England equivalent) found that after less than one year of undertaking the intervention, there were improvements in children's range of affective vocabulary, ability to share appropriate personal examples of experiences of basic emotions, a more in depth understanding of the changing nature of feelings and their ability to recognise different feelings in other people (Greenberg et al., 1995). This has also been supported by qualitative data into teachers' perceptions of the impact of PATHS in another study, in which teachers described pupils as having "increased self-awareness/more detailed feeling range" and "situations which were handled explosively and settled by fighting are now dealt with in a more appropriate manner"(Kelly, Longbottom, Potts, & Williamson, 2004, p.230-231). This is logical given that this is the basis of what is taught in the PATHS curriculum. The investigators also found interactions between children who were categorised as high risk for behaviour problems and improvements in some teacher-rated behaviours after undertaking the intervention. This supports the link between emotional understanding and management and behaviour described in the ABCD model.

PATHS is a spiral curriculum, in that it builds on itself as pupils develop and progress through school. The PATHS programme resources begin at pre-school level up to the last year of primary school (Year 6 in England), following a developmentally appropriate sequence. Ideally, pupils would complete the PATHS intervention each year at this crucial age of development as they move through Primary School. However, the programme is designed so that pupils can begin at any age, with recap activities and lessons providing a basis for the curriculum they will undertake. As Table 2 shows, most PATHS research includes children of lower primary school age, with 3 studies examining pre-school PATHS and 5 studies looking at PATHS in upper primary school. Domitrovich et al., (2007) undertook research into pre-school PATHS, involving 10 intervention classrooms for children from socio-economically disadvantaged backgrounds, who implemented the weekly lessons over a 9 month period. They found that children who had undertaken the PATHS lessons had improved emotional understanding and awareness; however, it did not impact significantly on inhibition control or problem-solving skills. This may be due to the measures used to assess the effect on these areas, the difficulty in assessing these outcomes, or the short time scale of the intervention. However, it may also allude to issues with the pupils' young age and that the impact in these areas may be more evident in slightly older children who are more developmentally able. This is supported by recent research which supported the benefits of PATHS in increasing emotional vocabulary,

awareness and expression and an increase in pro-social behaviour in pre-school children, but also found that teachers' reported the children as being too young and, due to their age, unable to control impulsivity and ability to 'Stop and Think' which is a component of the PATHS curriculum (Hughes & Cline, 2014). Furthermore, research with slightly older children, which examined the effect of PATHS on 318 children in Grades 2 and 3 (Years 3 and 4 in England) found significant impacts on executive function (inhibitory control), and consequent improvements in behavioural outcomes (Riggs, Greenberg, Kusché, & Pentz, 2006). Therefore, it may be that some aspects of PATHS are more suitable to being developed in slightly older children. Curtis and Norgate (2007) also note that most UK context research into PATHS has looked at pupils in early primary school and that it would be useful to assess the impact of the curriculum on older age groups. The current study will examine the benefits of PATHS for children in middle/upper primary school, who may benefit more from the intervention due to their age and stage of development.

Since the first studies into PATHS over 20 years ago, it has been found to show improvements in a range of outcomes. In fact PATHS is considered one of only 15 model or "blueprint" programmes, identified through a strict selection criteria which involves sufficient evidence, through robust research design, that the programme is effective in reducing adolescent aggression, delinquency and conduct disorders (Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). Of these 15 model programmes, PATHS is only 1 of 2 school-based social and emotional learning programmes (for further detail on why PATHS is the chosen focus of the current thesis, see pg. 61). Previous research has examined the effects of PATHS on mental health and behaviour. The Conduct Problems Prevention Research Group examined the effects of PATHS in the context of the Fast Track Programme, which aimed to prevent aggression and anti-social behaviour, while promoting social and emotional competence (Conduct Problems Prevention Research Group, 1999b). Three hundred and seventy eight classrooms from areas with greater than average crime were randomly assigned to the intervention or comparison group. They found modest positive effects of exposure to PATHS, including reduced aggression and increased pro-social behaviour (measured via teacher report). Additionally, they found intervention effects were stronger for pupils who showed higher baseline levels of aggression. However, a major limitation of this study was the simultaneous intensive intervention that was combined as part of the study for high-risk children. Although these children were omitted from the analyses, the effects of the intensive intervention may have impacted on the results, for example via improved peer relations, class

behaviour and teacher stress. Further studies have also found positive interventions effects on externalising symptoms (e.g. Crean & Johnson, 2013), internalising symptoms (e.g. Riggs et al., 2006) and pro-social behaviour (e.g. Conduct Problems Prevention Research Group, 2010) While other research has found a sustained effect of reduction in child self-reported depressive symptoms after undertaking PATHS, as well as a reduction in the rate of growth of teacher-reported internalising and externalising behaviours, amongst a sample of children with special educational needs, two years after receiving the programme (Kam, Greenberg, & Kusche, 2004).

PATHS has shown great promise in developing key protective factors and reducing negative outcomes. However, most studies of SEL programmes, including PATHS, highlight the overall effects - there is very little research exploring subgroup analyses to determine whether there are differential gains for at-risk children, particularly in children in middle/upper primary school (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Some previous research has examined the impact of PATHS on specific groups of children considered at-risk. For example, a recent Croatian study examined effects of PATHS for high and low risk children. However, while they reported effects on almost all outcomes within the subgroup of lower risk children, they did not find intervention effects within the high risk children (Novak, Mihic, Basic, & Nix, 2017). Additionally, The Conduct Problems Prevention Research Group (2010) examined how outcomes were affected by characteristics of the child (baseline problem behaviour, gender) and by the school environment (level of pupil poverty). They found intervention effects stronger in less socio-economically disadvantaged schools, and effects on aggression larger in pupils who had higher baseline aggression levels. However, there is a distinct lack of subgroup analyses utilising pupil level socio-economic disadvantage. Therefore, the current study aims to fill this gap, through examination of the effectiveness of PATHS in improving outcomes for children experiencing socio-economic disadvantage, through developing protective factors in order to buffer the potential negative outcomes associated with risk.

Most of this research took place in the USA, where PATHS was developed, and much includes developer involvement, which may cause bias. Evidence of PATHS in a UK context is scarce, with only 7 studies (see Table 2). Additionally, much of the research conducted within the UK has had significant limitations which suggest findings should be read with caution. Kelly et al., (2004) evaluated PATHS in a Scottish primary school using one class of 9-10 year olds. They found that target children, who showed emotional

and behavioural difficulties made significant improvements in emotional understanding and problem-solving skills. However, the results are limited by having no control group for comparison and the very small sample size used. Curtis and Norgate, (2007) found significant improvements on all five behavioural and emotional constructs on the teacher-rated SDQ in children from schools that delivered PATHS compared with control schools. However, there were significant limitations with the study. The baseline data showed that pupils from the control schools had significantly lower behavioural and emotional problems than pupils in the intervention schools. This meant that it was more difficult for these pupils to show improvements. Furthermore, the comparison of scores before and after intervention for both groups was analysed using paired t-tests and ANOVAs which do not take into account the clustered nature of the data, for example pupils in classes. This may have an impact on the teacher-ratings as there were only 5 intervention schools that were highly committed to delivering PATHS, therefore the small number of teachers who completed the SDQ measure may have had an inadvertent bias in wanting to see positive results after their hard work implementing the programme. A more recent study by Berry et al., (2015) did not support previous positive findings, reporting no effects after implementation of PATHS on a range of outcomes. Therefore, UK studies are mixed in their findings which may infer issues around cultural transferability. The present study will examine the effects of PATHS in a UK context.

Although PATHS has not been specifically designed to improve academic achievement, there are many plausible reasons why SEL programmes, such as PATHS, may promote learning outcomes and have a positive impact on academic achievement (Schonfeld et al., 2014). Problem solving skills which are developed can be applied to address and evaluate academic problems. Furthermore, the ability to inhibit impulsivity, which SEL interventions aim to develop, is beneficial in allowing children the chance to consider their answers on an academic assessment (Greenberg & Kusche, 1998). Additionally, SEL programmes often provide activities which aim to foster a positive student-teacher relationship, thus encouraging pupils to seek help and support from the teacher as needed. Therefore, pupils become more engaged and interested in the learning process (Schonfeld et al., 2014). This theory is underpinned by the PATHS logic model (figure 6), which suggests that undertaking the PATHS programme may have benefits for distal outcomes such as academic achievement as a result of improved proximal outcomes. Since academic achievement is a key outcome that schools aim to improve and there is evidence to suggest the benefits of social and emotional learning may play a role in promoting

academic achievement, it is a key to examine the potential impact of PATHS on academic outcomes.

While SEL programmes, including PATHS, have shown great promise in their development of key competencies which help children in a range of cognitive, affective and behavioural aspects, studies that examine the impact of PATHS on academic outcomes are scarce. As table 2 shows, only two PATHS studies examine academic outcomes. Greenberg and Kusche (1998) found some improvements in cognitive and academic skills in deaf children after undertaking PATHS, although they did not find significant difference in overall performance IQ. They found that children who had had the PATHS interventions showed less impulsive responding on the Matching Familiar Figures Test (MFFT) which was used to assess cognitive style in problem-solving in relation to reflectivity-impulsivity. They also found significant improvements in reading comprehension ahead of matched controls. However, the sample size was small ($n = 57$) and was made up of children with hearing impairments, who therefore had special educational needs. A more recent study by Schonfeld et al., (2015) reported the impact on academic achievement among students receiving PATHS via an RCT involving 24 primary schools, with some promising findings. They reported positive intervention effects based on various age groups for three academic areas (reading, writing and mathematics), specifically greater basic proficiency in reading and mathematics for Year 3s and writing for Year 4 and 5s, compared to the control group. Though the effect sizes were relatively small, the findings are promising, particularly given that there is an impact on distal effects via an intervention which does not directly target academic outcomes. Still, there is a distinct lack of research into the academic benefits of SEL in general. In Durlak et al's., (2011) meta-analysis of 213 studies into the impact of SEL programmes, only 16% included academic measures (e.g. standardised achievement scores), and fewer still, analysed the differential gains for pupils from disadvantaged backgrounds. Therefore, as well as the potential to improve academic outcomes that is detailed in the PATHS logic model, the lack of previous research further supports the rationale behind the present study which examines whether children from at-risk backgrounds benefit in improved academic attainment after undertaking the PATHS curriculum.

3.5 Enhancing resilience through PATHS

Section 2.4 in the previous chapter highlights the importance of developing protective factors at both the individual and contextual level in enhancing resilience. The third wave of resilience research (section 2.2.2; O’Dougherty-Wright et al., 2013) utilises knowledge about individual and contextual factors as protective processes in order to develop and design relevant intervention. Section 2.4 outlines the importance of developing core skills and contextual factors which act as protective factors and buffer the effects of risk (as outlined by the protective factor model). The following sections detail how PATHS aims to develop key individual and contextual factors through participation in the programme.

3.5.1 Individual factors

PATHS lessons aim to support the development of individual qualities and enhancing contextual characteristics that act as protective factors and buffer the effects of risk. PATHS includes four conceptual units. These are:

- Emotional understanding
- Self-control
- Social problem-solving and
- Peer relations and self-esteem⁶

Emotional understanding: As discussed in the previous chapter (section 2.4.1), emotional knowledge and understanding and the ability to identify and regulate emotions acts as a protective factor. PATHS includes a series of lessons which cover approximately 30 different emotional states. These lessons are developmentally and hierarchically sequenced starting with more basic emotions, such as happy, sad and angry, and leading to more complex affective states, such as disgusted, hopeful and malicious. Lessons include development of the ability to label, and verbalise, these emotional states. This ability is vital as it is the first step to effective self-control and problem resolution (Cook, Greenberg, & Kusche, 1994). Children are also taught how to recognise and understand how it feels to experience these emotional states in themselves and others.

Self-control: Leading on from emotional understanding is the ability to self-regulate and demonstrate self-control. As discussed in Chapter 2 self-control is an important first step for effective problem-solving. The PATHS lessons go over emotions that may lead to a

⁶ Taken from ‘Introduction to the PATHS programme’ as part of the curriculum pack (Kusche & Greenberg, 2008)

loss of control, such as anger and frustration, and differentiate between feelings (which everybody has) and behaviours (how individuals respond to these feelings). Modelling and role play are used to teach children steps to recognise and control feelings such as anger and frustration. The PATHS lessons also introduce the Control Signals Poster (CSP) which is a structured method to help children to calm down and learn better self-control and leads on to problem-solving. The CSP uses a traffic lights system in which children are firstly encouraged to stop, take a deep breath and say the problem and how they feel at the red light. A number of lessons focus on developing the children's calming down skills using the red light before they move on to the amber light (making a plan) and green light (trying the plan). Modelling is a key aspect of delivering the lessons. The teacher is encouraged to model a range of feelings and is also encouraged to model calming down behaviour, for example, verbally going through the steps for the class when a situation arises in which the teacher may need to calm down.

Social problem-solving: Another focus of the PATHS curriculum is in teaching interpersonal problem-solving skills. Lessons develop emotional awareness and understanding and self-control as prerequisites for learning key problem-solving skills. Children are taught an 11 step structured method for problem-solving which they practise during class time using a range of scenarios from school and home. The first steps include calming down and self-regulation, which as discussed in Chapter 2 is a key aspect of social problem solving. Children are expected to develop towards generalising these steps to everyday situations, and are encouraged to use them to solve real problems encountered in the class and school.

Peer relations and self-esteem: Peer relations and friendship are developed throughout the curriculum. During discussions, role play and activities about emotions, children are encouraged to consider feelings such as shy and lonely, as well as considering other people's feelings. Problem-solving issues that arise with peers is also covered. Peer relationships are also developed through the daily use of giving compliments to one child in the class randomly selected as 'Pupil of the Day'. These compliments also aim to boost self-esteem and self-confidence, which is another focus of the curriculum which is covered throughout.

3.5.2 Contextual factors

Classroom/school environment: As well as developing positive peer relationships, PATHS aims to encourage the development of an overall positive classroom, and ultimately school

environment. As seen in the previous chapter (section 2.4.2) creating a positive classroom ethos allows for development of key characteristics such as self-esteem, self-efficacy and motivation. Similarly, positive relationships between pupils minimises the need for classroom management and discipline, allowing more time for teaching and learning. The curriculum includes lessons which are designed to create an appropriate context and classroom atmosphere to enhance PATHS learning. This includes establishing classroom rules (which pupils are part of, in order to promote ownership, autonomy and compliance) and allowing time for PATHS Pupil of the Day and children/teachers to give compliments. The process of positively supporting one another on a frequent basis, through Pupil of the Day aims to enhance group cohesion and belongingness, which are critical for pro-social development. Furthermore, through this and developing classroom rules, pupils are being taught social responsibility via classroom norms that support skills of communication, participation, empathy and consideration of others. This aims to develop harmonious classrooms that are well-organised, less disruptive and calm with positive relationships. A further key aspect is the use of generalisation of PATHS. All members of school staff are encouraged to make use of 'teachable moments' to help children understand how and when they might use key strategies and skills. This also aims for the development of a positive school ethos throughout the wider school.

Parental involvement: As previously highlighted, the influence of parents in developing key competencies for resilience is crucial. PATHS encourages teachers and schools to keep parents informed about the programme and persuade parents to continue the learning at home through letters and home activities sent via the child. While PATHS does include some opportunities for parental/home activities, through send home letters and activities, in order to provide a consistent approach through school and home and allow pupils opportunities to develop their skills in the home environment, this is a very small part of the overall curriculum. The programme notes encourage schools to develop their own materials and strategies for encouraging parental involvement with PATHS.

The lack of explicit focus on family can be considered a limitation of the PATHS curriculum. Domitrovich et al's, (2010) so-called 'integrated' model of provision suggests a more comprehensive approach to addressing risk and protective factors. Integrated prevention models involve collaborating strategies or interventions into one enhanced, consistent, multi-component intervention. Domitrovich et al., (2010) suggest that single interventions may not adequately address the underlying mechanisms contributing to the problems. Therefore, an intervention which develops protective factors through

promoting social and emotional competences and building a positive learning environment may also add benefit by integrating parental provision too. Domitrovich et al., (2010) also suggests a second rationale for integrated models is maximising intervention exposure. Generalisation and reinforcement of intervention aims encourages the development application of skills and behaviours across settings, whether it is at school or in the community. Furthermore, the integration of strategies across domains may lead to a synergistic effect. This seems particularly prudent when considering both risk and resilience are heavily influenced by contextual factors, as discussed in Chapter 2. There has been growing support for School-Family Partnerships (SFP) integrated with SEL due to the body of research which has shown links between family involvement and children's cognitive, social, and emotional functioning, and associations between family involvement and higher self-esteem, improved behaviour, and school connectedness (Allbright, Weissberg, & Dusenbury, 2011; Christenson & Havsby, 2004; Patrikakou, Weissberg, Redding, & Walberg, 2005). Integrating SEL within a SFP framework reinforces the complementary roles of families and schools, and allows development of skills across the developmental contexts of home and school (Allbright et al., 2011). This is the ideal situation; however, developing a consistent home and school approach remains a challenge.

Although, the parental aspect is not of central concern to this thesis, as discussed in Chapter 2 it is an important factor in both risk and resilience. Therefore, it is useful to consider and highlight the improvements that could be made in this area in developing a more consistent school-home approach to enhancing resilience through developing protective factors which buffer against adversity.

3.6 Chapter summary

This summary provides an overview of the main sections detailed in this chapter exploring The Promoting Alternative Thinking Strategies (PATHS), the intervention of focus in the current study, and how resilience may be developed through participation.

- An outline of the PATHS intervention was provided using the TIDieR (Hoffmann et al., 2014) for clarity. This allows a full understanding of the aims and objectives of the PATHS programme, and the practicalities of implementation.
- The theory which underpins PATHS was examined, with a focus on the ABCD model of development (Greenberg & Kusché, 1993) and the PATHS logic model (Casel, 2007). The logic model is of particular relevance to the current study, examining the impact of mental health and academic outcomes through the enhancement of protective factors via PATHS.
- A summary of previous literature published about PATHS was provided. An in depth examination of key PATHS studies was also included, in order to acknowledge strengths and weaknesses of the research base into PATHS.
- An exploration of how PATHS may enhance resilience was included, with a focus on individual characteristics that aim to be developed through explicit teaching, and contextual factors such as school and parental involvement which may contribute. This links to the previous chapter and the discussion of individual and contextual aspects which may be significant in developing resilience.
- Chapter 3 aimed to fully examine all aspects of the PATHS curriculum in order to justify it as an appropriate and robust intervention to examine differential gains for socio-economically disadvantaged children. This always provides an understanding of the practicalities of the programme, before Chapter 4 which explores issues of implementation in more detail.

Chapter 4:

The importance of implementation

4.1 Introduction to chapter

It is not sufficient to simply provide a school with the resources in which to deliver an SEL programme, such as PATHS, particularly when evaluating the impact of that programme. There are many reasons why a programme may not be implemented effectively, leading to detrimental impacts on the subsequent outcomes that are hoped to be achieved (Greenberg et al., 2003). Over the years there has been a somewhat disjointed introduction and mass influx of school-based prevention programmes and activities meant to promote academic success, enhance health, and prevent problem behaviours, thus initiative overload is one reason implementation may be ineffective. The following chapter will outline what is meant by implementation, and why it is a key aspect of any research examining the impacts of an intervention programme, in section 4.2. This will be followed by an introduction to the various aspects of implementation in 4.3, with a more detailed discussion of the dimensions of quality, fidelity and dosage, which are pertinent to the present study. After this, 4.4 will explore the positives and challenges of various ways of measuring implementation, based on prior research. Section 4.5 will examine the small number of studies which include implementation in PATHS research, and highlight the areas in which there is a gap. The last part of this chapter will present the research questions of the present study, developed through drawing on the discussions and literature base of the previous four chapters. Section 4.6 provides a summary of the chapter. Finally, section 4.7 outlines the four research questions which guide the current thesis.

4.2 What is ‘implementation’ and why does it matter?

Implementation can be understood as “process by which an intervention is actually put into practice” (Humphrey, 2013, p86). Most interventions provide guidelines and structure as to how the programme should be implemented, however research in a variety of areas has shown that interventions are not always implemented as intended (Lendrum & Humphrey, 2012). For example, in a meta-analysis of over 200 research studies, Wilson, Lipsey, and Derzon (2003) found at least 40% of the programmes experienced implementation problems. Furthermore, inconsistencies in implementation practices can impact on the success of expected outcomes. In the same meta-analysis, Wilson, Lipsey,

and Derzon (2003) reported larger reductions in aggressive behaviours after programmes delivered with no or few implementation difficulties. Durlak (1998) reported similar results from several studies examining the connection between implementation and outcomes. They found, for some interventions, positive effects only occur when a certain level of implementation is achieved, and for other interventions higher levels of implementation were associated with more positive outcomes. Likewise, in a further meta-analysis of social-emotional learning universal interventions, Durlak et al., (2011) found programme implementation moderated positive outcomes, suggesting beneficial programmes must be well conducted.

Including information on implementation is critical to the validity of an evaluation of a programme (Durlak, 1998). To consider fully whether a programme “works”, then fundamental questions must be asked regarding what the programme is actually like in the real world, and whether inevitable implementation variability has changed it from the original intent (Century, Rudnick, & Freeman, 2010). Not including implementation data, or failure to implement an intervention as planned – known as a Type III error - can lead to errors in findings. The key variable of whether the programme has been implemented effectively has not been considered reducing the power of analyses (Durlak, 1998). This can lead to erroneous conclusions being made attributing findings to methodological underpinnings of a particular intervention (Dusenbury, Brannigan, Falco, & Hansen, 2003). Furthermore, omitting implementation data does not allow understanding of the full picture of how a programme has been delivered, or allow opportunities for replication of the study (Domitrovich & Greenberg, 2000). As Century et al. (2010, p.199) state, asking questions about implementation “move us from merely knowing *if* a program works toward understanding the *why, how, and under what conditions?*”. Nonetheless, this important aspect in evaluating the success of SEL programmes is often neglected. In their meta-analysis of prevention mental health programmes, Durlak and Wells (1997) highlighted the issue that very few investigations provided any relevant data on implementation, so it was therefore impossible to explore the effects on outcomes. While there has been some improvement in inclusion of implementation data in more recent research, Durlak et al., (2011) still reported that 43% of studies failed to monitor implementation in any way and therefore excluded it from analyses. Further examination of the type of implementation data that are included in much of the research also suggests that relational analysis (e.g. analyses that explores the relationship between implementation and outcome variability) is rarer still. Schoenwald and Garland (2013) report that only 10% of studies include this type of analysis. Table 2 highlights that much

of the implementation data reported in PATHS studies is descriptive, i.e. researchers report implementation monitoring to confirm that PATHS has been sufficiently delivered (high dosage, etc), but it is kept separate from main analysis (for example, see Riggs, Greenberg, Kusché, & Pentz (2006)). This means that much research in the area does not include important information on the complete representation of an intervention. This is why it is vital that future intervention research, such as the present study, includes analyses of implementation-outcome relationships.

With regards school-based SEL programmes, one of the main aims is to achieve positive outcomes through undertaking the programme. In school settings, education practitioners may be unable to achieve the favourable conditions often seen by developers of an intervention due to lack of expertise and/or resources available, which may lead to less-than-ideal implementation practices (Greenberg, Domitrovich, Graczyk, & Zins, 2005; Lendrum & Humphrey, 2012). The result may be a lack of success in preventative interventions, or the assumption that an intervention is not effective, when outcomes seen in development or efficacy trials are not transferred to ‘real life’ school situations (Dusenbury, Brannigan, Hansen, Walsh, & Falco, 2005). This often means that there is variability in implementation which may impact on outcomes, so it is imperative that implementation data are recorded and included as part of the analyses. Furthermore, teachers are individuals teaching in a range of different contexts. Therefore, it is plausible that SEL is not given the same priorities in some schools, and the variability of how SEL programmes are implemented is great. Thus, in order to fully examine the effectiveness of an intervention, and, in particular, what works in which situations, implementation must be taken into account. Key aspects of implementation, including the ones being included in the present study, will be discussed in the next section.

4.3 Dimensions of implementation

Although including data on implementation in analyses is key to a robust evaluation of an intervention, it is not as simple as ensuring interventions are delivered with fidelity, in other words exactly as the programme developers intended. For example, some outcomes may be enhanced through adaptations which contribute to the effectiveness of an intervention, rather than complete fidelity, and some positive outcomes may be seen even when the programme has only been partially delivered (Durlak & DuPre, 2008; Lendrum & Humphrey, 2012). Implementation is a complex topic and there are a range of aspects

to be considered. The eight most prevalent dimensions of implementation in SEL are outlined below:

Table 3: *Different elements in the study of implementation*

Dimension of Implementation	Description
Fidelity	The extent to which a school is adhering to the intended treatment model.
Dosage	How much of the intervention has been delivered.
Quality	How well different components of an intervention are delivered.
Participant Responsiveness	The degree to which children and their parents engage with the intervention.
Programme Differentiation	The extent to which intervention activities can be distinguished from other, existing practice.
Programme Reach	The rate and scope of participation.
Adaptation	The nature and extent of changes made to the intervention (which can be ‘surface’ or ‘deep’).
Monitoring of control/comparison conditions	Determining what SEL-related activities are taking place at the sites with which intervention schools are being compared

(From Humphrey, 2013)

The present study will focus on analyses of dosage, fidelity and quality/participant responsiveness⁷. These four dimensions have been chosen due to their relevance to the particular study, and importance in providing a more detailed overview with regards the evaluation of the PATHS programme for children at risk. Moreover, reviews of the existing literature suggest the importance of including analysis of fidelity, dosage, quality and participant responsiveness as the most significant aspects of implementation that have the ability to affect programme outcomes (Dusenbury et al., 2003; O’Donnell, 2008). However, while dosage and fidelity have dominated the literature somewhat, quality has been less prominent, with only 10% of studies focusing on it (Durlak & DuPre, 2008; Lendrum, Humphrey, & Greenberg, 2016). This may be related to the varied view of

⁷ Quality and participant-responsiveness have been combined as a result of a factor analysis conducted – see section 5.5.4 in methodology chapter.

implementation across the literature, particularly with regard to the distinction and overlap of some of these aspects of implementation, and the importance of each aspect in contributing to replication of positive outcomes (Humphrey, 2013). For example, Carroll et al. (2007) view fidelity as a superordinate construct, emphasising its overarching importance, with the other constructs as supporting indicators. In this regard, in order for any positive outcomes associated with an intervention to be replicated, the fidelity of the intervention which validated the results must be high (Lendrum et al., 2016). Conversely, some view implementation as the overarching construct, with fidelity considered a subordinate indicator alongside the other dimensions (Durlak & DuPre, 2008). This allows for analysis of the impact of variation in fidelity (as well as other indicators) on outcomes, which is realistic of the practicalities of implementation in the real world. This will be discussed in further detail below.

Furthermore, some dimensions may have prevailed in prior research over others because they are easier to measure. For example, measuring how much of a programme has been delivered should be relatively straightforward, than some of the more complex aspects which may seem to be more subjective, for example, the quality of the lesson. Similarly, although each aspect of implementation can be considered an individual construct, there is much overlap and considerable interconnectedness between them, which also makes it important to include them in robust analysis (Beets et al., 2008). The present study utilises the Durlak and DuPre's (2008) view of implementation as the superordinate construct, with specific indicators (such as fidelity) as subordinate contributors to overall implementation, and will incorporate analyses of dosage, fidelity, participant responsiveness and quality. The inclusion of implementation-outcomes analysis of these aspects will allow for a more detailed overview in regards the evaluation of the PATHS programme for children at risk, and allows further understanding of the “*why, how, and under what conditions?*”, as discussed at the start of the chapter (Century et al., 2010, p.199). Furthermore, a factor analysis conducted on the implementation outcomes provides a robust combined score for specific domains which are linked (this will be discussed further in section 5.6.4 in the methodology section). The individual constructs that are the focus of the present study will be described in more detail below, with a review of the literature relating to PATHS in section 4.5.

Fidelity

Fidelity, also known in the literature as ‘adherence’ or ‘integrity’ is the degree to which a programme is implemented as intended by developers and compared to the original design (Mihalic, 2004). In early research and evaluation of programmes, a basic assumption was made that programmes would be implemented as intended by developers. However, this was found to be incorrect and that implementers would often adapt programmes to fit with their needs and establish a sense of ownership (Blakely et al., 1987). One of the first studies into school-based implementation concluded that there was a lack of fidelity in the implementation of school programmes, as teachers are all individuals, with different ways of implementing, and different ways of perceiving programmes (Berman & McLaughlin, 1976). This is supported by Dusenbury, Brannigan, Falco, and Hansen, (2003) who undertook a review of research on fidelity of implementation of drug abuse prevention programmes. They found indications that teachers generally do not cover everything contained within a curriculum, are likely to reduce the amount they teach over time, and training alone is not enough to ensure fidelity. This is particularly pertinent as programme fidelity has been seen as a moderator of the relationship between interventions and intended outcomes (Carroll et al., 2007). In their review of programme integrity in prevention programmes, Dane and Schneider (1998), found lower adherence to programme protocol was often associated with poorer outcomes. However, as mentioned previously, in the field of implementation science there has been a running debate regarding fidelity and adaptation. While fidelity refers to how much of the programme is delivered as intended, it is not as simple as complete fidelity to a programme necessarily meaning positive outcomes (Durlak & DuPre, 2008). Some investigators argue that it is important to closely adhere to a programme method and intent for best results (Elliott & Mihalic, 2004). This is supported by research which suggests that fidelity is related to effectiveness, and decreases in fidelity may decrease effectiveness (Gray, Jakes, Emshoff, & Blakely, 2003; O’Donnell, 2008). Conversely, some suggest that moderate adaptation and modification (without drastic changes) can be beneficial in allowing particular needs to be met (Lendrum & Humphrey, 2012). Inconsistent findings in previous research support the idea that programme fidelity is a complex issue. For example, Domitrovich, Gest, Jones, Gill, and Sanford Derosie (2010), in a trial examining outcomes after a combined SEL (PATHS) and academic intervention, found variations in fidelity of PATHS to be associated with a range of child social-emotional outcomes, but fidelity to the academic intervention was negatively associated with academic outcomes.

There is limited research into variations of fidelity related to outcomes, with most research taking an all or nothing approach to fidelity (Elliott & Mihalic, 2004). Berman and McLaughlin (1976) suggest that the more flexibility an implementer has to modify a programme to suits their needs the more likely they will be to adopt and fully implement the programme, which will have an impact on outcomes. The tension between fidelity and adaptation is of particular significance when working with schools situated in diverse areas, including differing socio-economic backgrounds. In order for a universal SEL intervention to be truly inclusive, it must engage all of the diverse school community in which it is being delivered, otherwise participants of the intervention may not fully engage (Castro, Barrera, & Martinez, 2004). One issue with this is the tension between fidelity to a programme and adaptation to suit the requirements of the group receiving the intervention. Similarly, with school-based interventions, is the issue of teacher autonomy. Teachers may have different teaching styles and strategies, particularly in the UK where there is an assumed level of autonomy within the profession. Adhering to fidelity through a too prescriptive design may lead to teachers having to teach in a way they feel uncomfortable with, and may also disengage them from the intervention (Domitrovich & Greenberg, 2000). However, while adaptation may increase the sustainability of a programme, it is not desirable if it renders the programme ineffective (Elliott & Mihalic, 2004). Implementation fidelity and adaptation is a complex issue in which questions are raised regarding how much modification is too much and where the line should be drawn on adapting a programme. Whether strict programme fidelity or adaptation impacts positively on outcomes, it is clear that programme fidelity is an important concept to monitor and include in analyses. The present study includes data on fidelity which will also be incorporated into subsequent analysis. This will be discussed in further detail in the methodology section.

Quality

Throughout the literature on implementation, the term 'quality' is often used interchangeably with fidelity to a programme. This may be due to the view that some investigators hold that fidelity to a programme brings about improved outcomes and therefore can be considered quality of implementation (Domitrovich & Greenberg, 2000). However, as was discussed in the section on fidelity, small adaptations to a programme may allow a teacher to have autonomy and adapt to his/her teaching style, as well as the needs of their class. Therefore, Humphrey (2013, p.97) suggests that implementation quality can be considered similar to teaching quality and include aspects such as

“pedagogical methods used, the extent to which lesson objectives were covered successfully, the teacher’s interpersonal style and level of enthusiasm, and the provision of opportunities to generalise skills taught to other contexts”. Additionally, how well different programme components have been conducted (i.e whether the main elements have been delivered clearly and correctly) can be considered the implementation quality (Durlak & DuPre, 2008). Even with the best planning and intention, implementation quality of a programme can vary greatly from school to school, and teacher to teacher, and this may be detrimental for the desired outcomes. Furthermore, Domitrovich, Gest, Jones, Gill, and Sanford (2010) found that monthly implementation quality ratings improved over a year of delivery, as implementers gained confidence and familiarity with the programme. Although theoretically, it seems likely that implementation quality would have an impact on the delivery of an intervention, very few studies include quality analysis in their reports. In fact, Durlak and DuPre's (2008) review on implementation found that only 10 per cent of studies recorded data on quality, with inconclusive findings. For example, August, Bloomquist, Lee, Realmuto, and Hektner (2006) failed to find any effect on outcomes related to quality of implementation. More recent research also failed to report a direct relationship between quality of teacher implementation and pupil outcomes (Abry, Rimm-Kaufman, Larsen, & Brewer, 2013). However, there is a very limited evidence base on which to draw conclusions, therefore the present study will include data on this important aspect of implementation in relation to outcomes in order.

Participant Responsiveness

These aspects of the way in which a programme is delivered can have significant impact on how engaged the participants are, which in turn can affect outcomes. Capturing the attention of the young people who are participating in an intervention can be significant in successful implementation. Dane and Schneider (1998) suggest that participant responsiveness includes indicators such as participation and enthusiasm, in measuring engagement with intervention sessions. Empirical evidence which highlights the importance of participant responsiveness on outcomes supports this concept as significant in measuring implementation. For example, Tobler and Stratton (1997) found interactive programmes were significantly more effective than non-interactive programmes in improving outcomes relating to self-reported drug use. Similarly, Schoenfelder et al. (2013) found participant baseline characteristics (greater difficulties) predicted participant responsiveness, which, in turn, predicted programme outcomes of the Family Bereavement Program. Participant responsiveness has been previously utilised as a measure of high quality implementation, based on the implicit assumption that if

participants are actively engaged, interested and participate fully they are more likely to benefit, positively impacting on outcomes (Dusenbury et al., 2003; Greenberg et al., 2005). It is also likely to be influenced by other aspects of implementation, in particular quality. Lessons that are engaging and delivered with enthusiasm are more likely to hold the attention of learners (Domitrovich, Gest, Jones, Gill, & Sanford Derosie, 2010). In the current study participant responsiveness was found to be strongly linked to quality via a factor analysis – this will be discussed in further detail in section 5.6.4 of the methodology section. Therefore, the two were combined in the analyses.

Dosage

Dosage usually refers to how much of the original programme has been delivered, for example the amount of units (e.g. lessons) undertaken (Domitrovich et al., 2008). There is some evidence that, in certain contexts, higher doses of an intervention programme can produce more optimal results (Connell, Turner, & Mason, 1985). Previous research has shown higher levels of dosage of all components of a food-related intervention contributed significantly to students' healthy eating (Story et al., 2000). Moreover, high dosage compared with lower levels of participation, in an early intervention for at-risk infants, resulted in more positive cognitive outcomes (Hill, Brooks-Gunn, & Waldfogel, 2003). With regards SEL programmes, Aber, Jones, Brown, Chaudry, and Samples (1998) found that higher number of SEL lessons, delivered as part of aggression and violence reduction intervention, was related to slower-growth in aggression-related processes, and less of a decrease in competence-related processes, compared to children who had undertaken few or no lessons. Furthermore, for teachers who had been given high level training on the programme, but taught few lessons, children in their classes still showed significantly faster growth over time in aggressive behaviours. Similarly, Reyes, Brackett, Rivers, Elbertson, and Salovey, (2012) found students had more positive outcomes when their teachers taught more lessons as part of a social and emotional learning curriculum. Additionally, in their review, Dane and Schneider (1998) found that programmes appeared to be less efficacious for participants who have only undertaken a small proportion of planned sessions. This may be because an intervention is only effective once the children have participated in a sufficient amount of the programme. Humphrey (2013) likens this to an inoculation metaphor, comparing preventative SEL programmes such as PATHS, to medical interventions which aim to strengthen responses and build resistance against something harmful. Similarly, PATHS aims to build resilience against risk factors, however, it is important that a sufficient amount is undertaken in order to have the desired effect. Some studies have found that higher dosage had no or little

positive impact on outcomes (e.g. Domitrovich, Gest, Jones, Gill, & Sanford Derosie, 2010; Lillehoj, Griffin, & Spoth, 2004; Resnicow et al., 1998). This could be for a variety of reasons. Examining dosage as a standalone concept of implementation can be considered too simplistic as it potentially overlooks the variation in teaching of a programme (Humphrey, 2013). For example, teachers may decide to vary the dosage based on their judgement of how well the pupils have understood and generalised the concepts being taught. Therefore relatively low dosage may not necessarily mean poor implementation, but may show a teacher who has established understanding in her class and moves on when appropriate. It is, therefore, important to consider dosage in order to explore how much of an intervention is enough to have the desired positive effect on outcomes, but also to ensure it is included along with other measures of implementation. Thus, dosage will be included as one aspect of implementation measured in the present study's analyses. Additionally, when considering the reasons studies which have shown that higher dosage had little or no effect on outcomes, it is key to also consider how dosage has been measured. For example, two studies which included measures of dosage gathered from both independent observations and teacher self-report found that observer-reported implementation ratings were significantly associated with outcomes, whereas teacher-reported ratings were not (Lillehoj et al., 2004; Resnicow et al., 1998). This may highlight weaknesses in using implementer self-report ratings, which may be inflated as a result of social desirability i.e. teachers may report higher dosage in order to meet perceived expectations (Domitrovich et al., 2010). Measuring implementation will be discussed in further detail in the next section.

4.4 Measuring implementation

Measuring implementation of preventative programmes, such as PATHS, in school settings can be challenging for a variety of reasons. Dosage is considered one of the easiest measures of implementation to quantify as it is usually presented in terms of a specific number of units delivered (e.g. number of lessons undertaken), or the amount of time spent participating in an intervention (e.g. number of hours) (Domitrovich et al., 2008). As it is relatively simple to measure, it is commonly considered in studies which have included data on implementation. Durlak and DuPre (2008) noted that half of studies which examined implementation included measures of dosage. As discussed above, delivering a set amount of units does not necessarily equate to quality or fidelity which may impact on outcomes, so it is important to measure different aspects of implementation together. However, quantitative measures of aspects of implementation,

such as quality, can be more challenging. Some measures, such as observations, can be difficult to collect, costly and time-consuming (Domitrovich et al., 2010). Self-report can be seen as an easier way to collect implementation data, however, as mentioned in the previous section it could be argued that it does not provide as reliable data as outsider observations (Durlak & DuPre, 2008). Self-report data tend to be higher than observational data, which may be due to implementers eagerness to portray a positive picture of implementation or differences in understanding of the requirements for implementation of a programme (Humphrey, 2013). Moreover, prior research has suggested observational data are more likely to be linked to outcomes than self-report data (e.g. Hansen, Graham, Wolkenstein, & Rohrbach, 1991). Durlak and DuPre, (2008) note that as observational data are more objective, it can be considered the more preferable option in implementation analyses. Therefore, observational data are the preferred measure for the current study.

Additionally, it is important to consider the way of quantifying implementation data. Durlak and DuPre (2008) note that, of the studies they examined, there are two major ways to include implementation data. The first is by assessing implementation in a continuous scale (e.g. using percentages for level of fidelity or dosage achieved). In this way, investigators often correlate the level of implementation with outcomes. An example of this type of research used a continuous scale of implementation scores of teaching practices and found that teachers who scored towards the high end of the scale saw more favourable outcomes in levels of classroom engagement and attachment to school (Abbott et al., 1998). The second method is by creating categorical groups of provider variability in level of implementation (e.g. low versus high implementation groups). As there are no universally agreed threshold of implementation ratings for PATHS, the present study uses this method by developing implementation categories of low, moderate and high (the technical aspects of how these categories were formed is discussed in detail in section 5.6.4 of the methodology chapter). Previous attempts to impose thresholds of implementation ratings can be considered arbitrary (Berry et al., 2016). Additionally, there may be questionable difference in values on a rating scale (for example, between an 8 or 9) which is reduced by categorical scoring. Furthermore, the use of a distributional cut-point method allows categories to be developed tailored to the current sample, rather than based on arbitrary thresholds of what may be considered effective implementation (Durlak & DuPre, 2008; Humphrey, Barlow, & Lendrum, 2017).

4.5 Implementation of the PATHS programme

Of the published articles into PATHS (see Table 2 in Chapter 3), just over 50% (14 studies) include implementation data in their reports. In one of their initial studies into the PATHS curriculum, Greenberg et al., (1995) found that although there were improvements in children's understanding and expression of basic emotions, children continued to struggle with more complex emotions and ideas surrounding how emotions function. One possible explanation for this may be that there was limited monitoring of implementation of the programme, besides noting some variation in quality of delivering the lessons amongst the teachers. It is possible that some children failed to understand more complex ideas due to this lack of quality in the lessons. As the investigators did not report the number of lessons delivered, it is also possible that the teachers did not manage to get to the more complex ideas in the curriculum. Therefore, taking into account the key aspects of implementation is important in ensuring robust analyses.

Furthermore, as can be seen from Table 2, analysing the association between implementation and outcomes are rare in previous PATHS research. Of the few studies that have included implementation data, 8 have kept it separate from the main analyses. For example, Riggs, Greenberg, Kusché, and Pentz (2006) include a brief note about implementation in their study, in which they report that fidelity was assessed through monthly ratings of quality of implementation, and that, although there was wide variation in the quality of implementation, most teachers completed the curriculum. However, they do not detail the variation in implementation quality, nor link it to outcomes, so it is unclear as to the impact of the implementation, if any, on outcomes. Most of the studies included in Table 2 that consider implementation do not integrate it in their outcome analyses, and use it to report that PATHS was sufficiently implemented in the context of the study (e.g. Conduct Problems Prevention Research Group, 2010). Other studies weakly link implementation to outcomes. For example, Schonfeld et al., (2015) report "dosage effects", in that pupils whose teachers reported teaching more of the lessons were more likely to achieve basic proficiency. However, the researchers omit how they established dosage.

Of the PATHS studies which actually include analyses exploring the links between implementation and outcomes, findings are mixed. In their trial examining PATHS and six other universal SEL interventions, the Social and Character Development Research

Consortium, (2010) did not find significant associations between increased fidelity and improved outcomes. Similarly, Goossens et al. (2012) examined both PATHS and implementation dosage and quality, and found that neither was linked to outcome variability. By contrast, The Conduct Problems Prevention Research Group (1999) assessed the impact of the quality of implementation of PATHS, by measuring the quality of teaching and classroom management during observations, as well as dosage. While they did not find any effects linking quality to sociometric outcomes, ratings of teacher skill in programme implementation – specifically teaching PATHS concepts, modelling and generalising PATHS concepts and classroom management – predicted positive outcomes relating to teacher ratings of Authority-Acceptance. No effects for dosage were found. Additionally, Faria, Kendziora, Brown, Brien, and Osher's (2013) study of PATHS implementation and outcomes found children's attention was positively associated with increased dosage and overall implementation, which, in turn, predicted social competence. Furthermore, a study by Kam, Greenberg, and Wall (2003) only found significant intervention effects, on outcomes of improved emotional competence and reduced aggression, in schools where both senior management support and implementation quality were reported as high, but found no main effect of variability in implementation quality on a range of social and behavioural outcomes. A more recent study by Berry et al. (2015) found that social and behavioural outcomes were better for children in schools that implemented PATHS with high fidelity (80% or greater fidelity as rated by an outside observer), rather than low fidelity (79% or less fidelity), however, high fidelity schools did not significantly outperform control schools. With regards academic outcomes, Schonfeld et al. (2015) found a positive relationship between dosage and reading and maths mastery status, however there are limitations with their measurement of dosage, as described above. While there is significant inconsistency in findings, there is some evidence to suggest that there may be a link between PATHS implementation and outcomes, which has been overlooked by many studies.

This lack of research into implementation and outcomes of PATHS is a major gap in the field, which the present study aims to contribute to. Furthermore, there is a distinct lack of research which examines both differential gains for children at risk, while including analyses exploring the association between implementation and outcomes. The present study will also contribute to this neglected area of research.

4.6 Chapter summary

This summary provides an overview of the main sections detailed in this chapter exploring the importance of including implementation data in examining the impact of an intervention.

- An outline of what is meant by implementation was provided, as well as reasons as to why it may impact on the validity of an evaluation of a programme. Justification for the inclusion of implementation in analyses was also considered.
- Eight key aspects of implementation were highlighted, with explanation for the focus on four aspects (dosage, fidelity, quality and pupil responsiveness) in the current study. The four aspects prevalent to the current study were examined in more detail.
- The complexities of measuring implementation were discussed, with justification provided for the use of independent observation utilised in the current study.
- Additionally, an examination of implementation in the PATHS literature base was provided, with reference to Table 2 in Chapter 3. The lack of research into PATHS implementation variability and outcomes was highlighted as gap in the field to which the current study aims to fill.

4.7 Research questions

The previous four chapters have included discussions and a review of the literature regarding poor outcomes resulting from risk, and developing resilience in order to thrive despite adversity. Furthermore, the potential bridge between risk and resilience that preventative interventions such as the PATHS curriculum can make was also highlighted. Additionally, the importance of including implementation data in analyses in order to explore the full impact of an intervention on outcomes has been discussed. In this regard, the research questions of the current study are included below, and are answered through the rest of the thesis.

Research question 1: Is socio-economic disadvantage associated with risk of poorer mental health and/or academic outcomes in children?

Research question 2: Are there differential gains in mental health outcomes (externalising problems, internalising symptoms and pro-social behaviour) and/or academic attainment (English and mathematics) for at-risk children, as a result of exposure to the PATHS curriculum?

Research question 3: Do any differential gains vary as a function of implementation (dosage, quality/participant responsiveness and fidelity)?

Research question 4: What are teachers' perspectives in relation to implementation of the PATHS curriculum? (Qualitative strand)

Chapter 5:

Methodology

5.1 Introduction to chapter

This chapter provides a detailed description of the methodology for the current study, in order to explain how the study was conducted, and justify it as the most appropriate approach to answer the research questions presented at the end of the previous chapter. The first section, 5.2, examines the epistemological considerations, necessary in order to understand the decisions made in the design of the study. The pragmatic approach taken in this study has direct impact on the use of mixed methods as the main design, and the use of this is explained and justified in further detail in this section. Section 5.3 summarises the overall design of the current study, including the integration of the quantitative and qualitative approaches taken as part of the mixed methods design. As the current study draws upon data from a wider research evaluation project, upon which the author worked as a research assistant, Section 5.4 outlines the context in which the data was gathered and clearly defines the differences between the current study and the wider project.

Section 5.5 outlines the study participants, including key characteristics of the sample and comparisons with national averages and section 5.6 leads on with an explanation of the measures and instruments used, including detailed descriptions of the Strengths and Difficulties Questionnaire (SDQ) and the use of national curriculum Standard Assessment Tests (SATs) scores as the academic outcome, including conversion to points scores appropriate for statistical analysis. This section also details how the observation data was obtained and used in the analysis of the relationship between implementation variability and outcomes. Moreover, information is provided on the interview data used for the qualitative analysis strand of the study. Finally, information on the background variables used in the analysis is also provided in this section.

The final section of this chapter begins with section 5.7, which contains a detailed description of the procedure of the present study, for the purposes of replication. Section 5.8 outlines the analytical strategy used in the current study and section 5.9 details the ethical considerations made in the study. The chapter ends with a summary of statements of the methodology.

5.2 Epistemology: Pragmatic approach

Epistemology is the study of knowledge – what it is and how it is constructed - which greatly impacts on research foundation, methodological design considerations and construction of knowledge. Morgan (2007) suggests an epistemological stance is an inherent belief system which impacts how research questions are asked and answered. This, in turn, influences development of research questions and methodological approach, and also justifies and contributes to the acquisition and make up of knowledge (see Figure 7 below for relationship between epistemology, methodology and acquisition of knowledge). For these reasons, epistemology is inescapable and therefore, must be considered and reflected upon, in order to examine the way research has been designed and conducted, and subsequently how knowledge has been formed (Carter & Little, 2007).

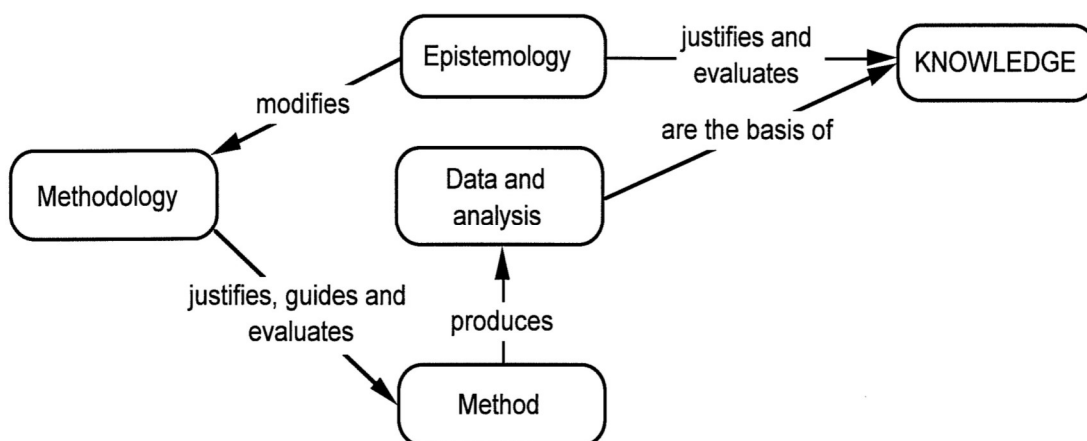


Figure 7: The simple relationship between epistemology, methodology, and method (adapted from Carter & Little, 2007).

This study is conducted from a pragmatic epistemological stance, which emphasises the justification of knowledge by representing the environment through a problem-solving approach. The Pragmatist movement emerged primarily from the work of Charles Sanders Pierce (1839-1914), William James (1842-1910) and John Dewey (1859-1952), although others were later involved in developing the ideologies. Pragmatism was born out of a rejection of traditional assumptions that knowledge about the “real world” could be developed solely through a single scientific method (Maxcy, 2003). Research for early pragmatists meant a shift away from previous paradigms that often polarised quantitative and qualitative research methods. A pragmatic approach to research offers an alternative

to the traditional views of quantitative purists who view research as purely objective, with researchers viewing the outside world as a separate entity, or qualitative purists who focus more on human thought as the subjective knower (Johnson & Onwuegbuzie, 2004). Pragmatists recognise that knowledge is an intertwining connection between the real world and humans' interpretations and interactions with it. They, thus, recognise that knowledge is an evolving process, depending on time and context (Maxcy, 2003).

Research from a pragmatist standpoint is driven by an attempt to clarify meaning and explore utility and consequences (Cherryholmes, 1992). It is important that educational research is relevant and impacts on the policies and practices of the field. This study is guided by the pragmatist approach that research should not only inform what is going on, but should influence practical application (Biesta & Burbles, 2003). Rather than focusing on whether knowledge accurately reflects reality, pragmatist researchers ask if the knowledge serves a purpose (Rorty, 1999). This study aims to understand the relative strength of risk factors on mental health and academic attainment, in order to inform practice and policy in building resilience in this area.

Pragmatism highlights the importance of understanding the practical consequences of knowledge as tools for action, predication and problem-solving, and not just the need to describe, represent or mirror the world (Cherryholmes, 1992; Hookway, 2013). In this regard, a pragmatic approach is flexible and practical and is often considered a 'common sense' approach. Pragmatics aim to take a more pluralistic approach, allowing knowledge about the world to be developed through the best approach in order to answer specific research questions, which allows the flexibility of choosing the best methods of inquiry in new ways to answer questions. This flexibility is also one of the common criticisms of the pragmatic approach. Practical and flexible approaches can be vague, unless explicitly addressed by the researcher (Johnson & Onwuegbuzie, 2004). Furthermore, pragmatic researchers can sometimes fail to provide an appropriate rationale for whom their approach is best suited (Mertens, 2005a). Still, the supposed weaknesses of the approach can also be considered the strengths, particularly as theoretical argument is not always beneficial in applied research to gain solutions for real-world problems. Therefore, in conducting pragmatic research there is a need for appropriate justification to ensure high quality and rigorous research (Johnson & Onwuegbuzie, 2004).

Often, in social science research, there is an emphasis on the distinction and, almost polarisation, between quantitative and qualitative research (Morgan, 2007). However, Howe (1988) suggests that, in fact, there is a compatibility in quantitative and qualitative methods, which is not only encouraged, but often a necessity, particularly in educational research. In this regard, a mixed methods design is well-suited to the pragmatic approach, allowing the researcher to choose the benefits of both quantitative and qualitative research as suited to the research questions.

5.2.1 Mixed methods research

The current study, in applying a pragmatic paradigm to the research, utilises a mixed methods design. As a paradigm which recognises the benefits of both the conventionally opposed postpositivism-quantitative methods and constructivism-qualitative methods, some researchers have suggested that pragmatism is optimum for justifying the use of a mixed methods approach (Tashakkori & Teddlie, 1998). Mixed methods offers an alternative to quantitative and qualitative traditions by advocating the use of the most useful methodological tools, both qualitative and quantitative, required in order to answer the research questions being studied, in line with the pragmatic paradigm (Teddlie & Tashakkori, 2009). Mixed methods has been defined as “a type of research design in which qualitative and quantitative approaches are used in types of questions, research methods, data collection and analysis procedures, and/or inferences” (Tashakkori & Teddlie, 2003, p.711).

Combining quantitative and qualitative methods is challenging and it is important to clearly outline the reasons to do so (Creswell & Clark, 2007). It can be argued that the mixed-methods design allows the researcher to gain a broader perspective and deeper understanding than they could through a single method of research (Mertens, 2005a). Johnson and Onwuegbuzie (2004, p.14) suggests that “the goal of mixed methods research is not to replace either of these approaches but rather to draw from the strengths and minimize the weaknesses of both”. In some aspects, either quantitative or qualitative analyses will be sufficient in answering the research question, however, there are some research situations when both will complement each other and provide a deeper understanding. Moreover, Newman, Ridenour, Newman, and DeMarco, (2002) suggest that when research is more complex and includes multiple questions, it can often be appropriate and necessary to use mixed methods in order to meet the purposes of the research. In developing a conceptual framework, Greene, Caracelli, and Graham (1989)

identify five key reasons or purposes of mixed methods research. These five purposes allow a clearer understanding of the benefits and uses of mixed methods research.

Table 4: *Purposes for mixed-method evaluation design, adapted from Greene et al (1989)*

Purpose	Rationale
Triangulation	To seek convergence and corroboration of results from different methods.
Complementarity	To allow for elaboration, enhancement, illustration and/or clarification from one method on another method.
Development	To use the results from one method to help develop or inform the other method.
Initiation	To seek the discovery of paradox, contradiction, new perspectives and re-asking of questions using different methods.
Expansion	To seek to extend the breadth and range of inquiry by using different methods to explore different components.

There are also criticisms of mixed methods design. One major concern is the ‘incompatibility thesis’, which suggests that it is unsuitable to mix qualitative and quantitative methods due to fundamental differences in the underlying paradigms of these methods (Guba, 1987; Sale, Lohfeld, & Brazil, 2002). However, through utilising pragmatism as justification for a mixed methods design, this argument can be countered. Pragmatism posits that quantitative and qualitative methods are compatible in that they allow and encourage integration of different theoretical perspectives in order to answer the questions being studied (Teddlie & Tashakkori, 2009). Additionally, Sale et al., (2002) recognise the incommensurate nature of quantitative and qualitative methods, however they propose that these methods can still be usefully combined in a single study, for complementary purposes, in that each method studies a different phenomena. This is true in the present study in which a mixed method approach has been utilised in order to answer different complementary questions and gain a broader view of the area of research. A further logistical consideration of mixed methods research is that it requires more time and effort than single approach studies, particularly given that researchers are expected to master both research methods approaching both with equal consideration (Tashakkori & Teddlie, 2003a, 2003b). However, this should not preclude mixed methods research

taking place when it is beneficial to include both quantitative and qualitative methods to best answer the research questions. The current study approaches the mixed methods design with an integrated approach, and not in an artificially separated manner. The two methodologies complement each other in fully answering the research questions providing analysis on different aspects of the same issues.

This study has been designed to explore not only the differential gains of a universal social and emotional learning programme for children who can be considered at-risk, but also the relationship between implementation variability and outcomes. In order to understand the complex nature of implementation and the impact on outcomes, a mixed methods approach has been utilised for data collection and analysis. The multiple methods and measures provide a broader perspective and deeper understanding of factors which affect implementation and the broader impact of implementation on children's outcomes than could be achieved by a design which solely relied on either quantitative or qualitative methods. In relation to Greene et al.'s (1989) purposes for mixed-method evaluation, this study utilises a mixed method approach mainly for complementary and expansion purposes in order to examine different questions and gain a broader perspective of the same area, namely implementation effects on delivery and outcomes of an SEL programme.

5.3 Design

5.3.1 Overall design

As discussed in the previous section, this study uses a mixed methods design, driven by the pragmatic approach in choosing the best tools to answer the research question. Within this, the present study is a fixed design, that is the quantitative and qualitative methods were predetermined during the planning stage at the start of the research and the procedures were implemented as such (Creswell & Clark, 2007). However, Creswell and Clark (2007) suggest that many mixed methods designs actually fall onto a continuum between fixed and emergent designs, allowing some flexibility in the qualitative phase emerging based on the researcher's interpretation of results from the initial quantitative phase. In the current study, although the qualitative strand was planned during the initial design phase, some of the thematic analysis elements emerged as a result of the findings from the core quantitative strand. Further detail on how the thematic analysis was conducted in the present study can be found in section 5.8.3.

Furthermore, the current study can be considered parallel form or concurrent, in that the data for both quantitative and qualitative strands were collected at the same time (Mertens, 2005a). The design of the current study can also be considered a component complementarity design (Caracelli & Greene, 1997). This type of design includes one dominant method which is enhanced or elaborated through findings from another method and allows the researcher to examine different facets of a phenomenon in order to obtain a more meaningful understanding (Graff, 2014). In this case, the dominant method is the quantitative strand with the qualitative strand offering an elaborative element on the findings, but collected concurrently (QUANT + *qual*). Morse (2010) highlights the importance of diagramming in order to envisage the implementation of the project and how the different methodological strands will be structured and utilised in order to maintain control and rigour. The use of QUANT + *qual* reference code indicates a quantitatively driven, quantitative and qualitative simultaneous design (Teddlie & Tashakkori, 2009). Figure 8 below provides a diagrammatic overview of the QUANT + *qual* design used in the current study.

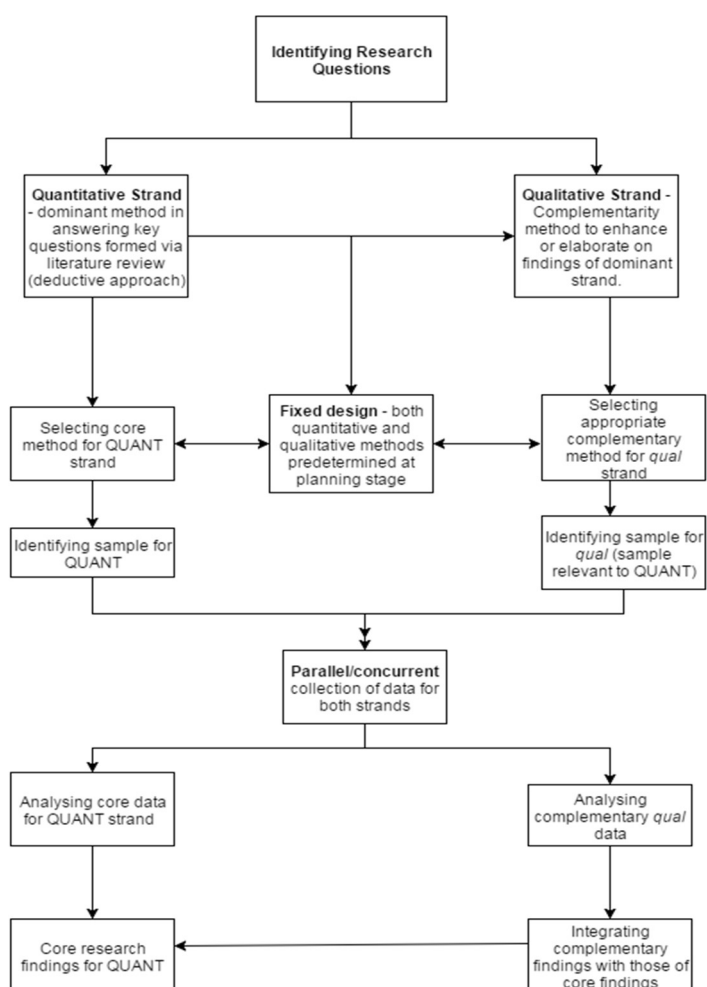


Figure 8: Flowchart of the mixed methods design

There are a variety of benefits to using the complementarity mixed methods design. Using qualitative data in order to supplement the quantitative data, the aim is to provide depth and contextual relevance to the breadth and representativeness of the core findings, enhancing the overall research (Caracelli & Greene, 1997). However, as described in section 5.2.1 there are challenges associated with using a mixed methods design. For example, the researcher must successfully manage both quantitative and qualitative methods and analysis and an appropriate rationale for combining both methods must be formed. Furthermore, it is important to ensure the findings are integrated, in this case, in order that the qualitative strand complements the quantitative strand and is not just an “add on”. However, in the current study these challenges have been given prior consideration and add to the management and rigour of the research.

Approach to research questions (RQs)

The quantitative aspect of the current research was designed to address RQ1, RQ2 and RQ3, examining firstly the differences between children experiencing more social disadvantage and their peers in mental health outcomes and academic achievement, and secondly differential outcomes after undertaking the PATHS curriculum over a two-year period. RQ1 includes preliminary analysis of the whole sample of baseline data from the SDQ teacher survey data and the National Pupil Database (NPD) in order to examine whether there is a difference in mental health, for children eligible for FSM compared with those who are not eligible. A further analysis examines whether there is a difference between children eligible for FSM and their non-eligible peers in academic attainment using analysis of the Key Stage 1 National Curriculum tests (derived from the Department for Education NPD) which the children sat when they were in Year 2. RQ2 examines differential gains for children eligible for FSM through hierarchical linear analysis (multilevel modelling) in mental health outcomes (teacher-report SDQ) and academic attainment (National Curriculum test data) after two years of undertaking PATHS compared with those eligible for FSM who continued with their school’s usual practice (control). RQ3 utilises an exploratory analysis which examines the association between variability of implementation of PATHS, using classroom observation data, and differential gains for both mental health (SDQ) and academic outcomes (National Curriculum tests). A detailed description of the quantitative analytical approach is provided in section 5.8.2 of the current chapter. A qualitative approach was chosen as the best means in which to answer RQ4, which examines teachers’ perspectives of implementing the PATHS curriculum. Teacher interviews are used to generate data that

could be analysed thematically and will supplement the quantitative data in this study. This is further explained in section 5.8.3.

Integrating quantitative and qualitative data

An important and often challenging aspect of the complementarity mixed methods research (MMR) design is ensuring there is appropriate balance and integration of the quantitative and qualitative strands of the research. Rigorous MMR depends on each method being undertaken and utilised reliably, and avoiding one strand becoming an unnecessary “add on” (Greene, 2007). In the current study the inclusion of qualitative data acts as complementary and explanatory to preceding quantitative analysis, particularly examining implementation variability. This is an approach which has been utilised and supported by advocates of mixed-methods research and can be seen as useful in exploration as to the reasons why differences were found in quantitative analysis (Tashakkori & Teddlie, 2003a). Additionally, the flexible approach of mixed-methods research, driven by a pragmatic approach, allows opportunities to explore additional features of the research topic as themes emerge during the analysis. In order to ensure validity and rigour of the qualitative strand, an appropriate sample must be utilised in order to avoid anecdotal accounts (Silverman, 2000). In the current study maximum variation sampling is utilised in order to preserve rigour and interpretability of findings (see section 5.5.3 for further detail).

5.3.2 Trial design – RCT

The overarching research design is a cluster-randomised controlled trial (RCT); the ‘clusters’ in this case are primary schools. RCTs work by randomly allocating participants (in this case, schools) into different groups, some of whom receive an intervention and some of whom do not, then comparing the outcomes for those who received the intervention with those who did not. After criticism regarding the quality and significance of educational research (e.g. Hargreaves, 1999; Tooley & Darby, 1998) there has been a steady increase in the use of RCTs in the UK, as researchers aim to undertake high quality research with the intention of demonstrating the effectiveness of novel educational interventions (Torgerson & Torgerson, 2005). RCTs are considered the ‘gold standard’ for testing if an intervention works, without which there is a risk of subjecting children to educational initiatives which have no evidence-base, with potentially detrimental consequences (Haynes & Goldacre, 2012; Maughan, 2013; Shadish, Cook, & Campbell, 2002; Tymms, Merrell, & Coe, 2008). However, there is some debate about whether this approach deserves the high status afforded to it. Some critics claim that it is too simplistic

to rely on one research approach in order to find out what works (Stewart-Brown et al., 2011). Some suggest that RCTs should be undertaken in situations where it is possible to use them, with the acknowledgement that they are not suitable for all research designs (Lather, 2004). Circumstances in which an RCT may be appropriate are when examining the effectiveness of a prescribed intervention on a specified set of outcomes.

In the context of the current study, the design is beneficial as it provides optimal scientific rigour and is still widely considered to be the best approach for testing if an intervention works, one of the aims of the research. Use of a control group allows the impact of an intervention to be compared to usual practice, and random allocation to intervention and control groups helps to eliminate sampling bias (Torgerson & Torgerson, 2001). However, use of a RCT design does not preclude the use of qualitative techniques. While an RCT might be beneficial in examining *if* something works, they are not always useful in understanding *why* something works (Goldacre, 2013). Indeed, a qualitative strand can provide powerful supplementary explanatory and confirmatory data. Thus, this is further justification for the mixed methods approach taken in the current study, incorporating qualitative analysis of teacher interviews to further explore quantitative analysis and ensuring that the research questions are answered comprehensively.

5.4 Context of present study

This study utilises data collected as part of the larger 'PATHS to Success' efficacy randomised controlled trial, led by Professor Neil Humphrey at the University of Manchester, funded by the National Institute for Health Research and the Education Endowment Foundation, in which the author acted as a research assistant. The trial focused on the implementation of the Promoting Alternative Thinking Strategies (PATHS) curriculum and its impact on children in Key Stage 2 (Years 3-6), as part of an intention-to-treat (ITT) analysis. ITT analysis includes every participant who is randomised according to treatment assignment, in order to get an overall idea of intervention effect (Gupta, 2011). The following sections describe in more detail the PATHS to Success trial, and outline where the current study has emerged from. Details of the key differences between the current study and the larger trial are also included in order to validate it as an original piece of research and contribution to knowledge.

PATHS to Success trial

The PATHS to Success trial focused on the implementation of PATHS and its impact on children in Key Stage 2 (Years 3-6), using an RCT design. 45 participating schools in Greater Manchester were randomly allocated to an intervention group or a control group. The 23 intervention group schools received PATHS training and delivered the intervention for two school years (2012-2014), during which time they received technical (coaching) support and assistance from the author and two other doctoral students. The 22 control group schools continued their usual practice during this period. There were 5218 children involved in the study. Of these, approximately one-third transferred to secondary school at the end of the main trial – these children were tracked for a further two years to see if PATHS impacted upon their adjustment to their new school, and also to see if any intervention effects were sustained over time. The trial conducted a variety of analyses to explore the ITT effects of the PATHS curriculum, these were:

- A range of measures taken at regular intervals to help find out if PATHS was effective, including social and emotional competence, health related quality of life, school attendance, and academic attainment.
- Economic analyses performed to gauge if the PATHS intervention provided good value for money.
- Detailed information collected about the implementation of PATHS in each classroom – for example, adherence/fidelity and adaptations, dosage, and participant responsiveness.

Table 5 below details the research questions developed at the start of the trial which underpinned the data collection and subsequent analyses:

Table 5: *Research questions and hypotheses from the PATHS to Success Trial*

Research Question	Hypothesis
RQ1	H1: Children in primary schools implementing PATHS over a two-year period will demonstrate significant improvements in social and emotional competence (1a), health-related quality of life (1b), exclusions (reduction) (1c), attendance (1d) and academic attainment (1e), when compared to those children attending control schools
RQ2	H2: The effects outlined in H1 will be sustained at two-year post-intervention follow-up
RQ3	H3: Children in primary schools implementing PATHS over a two-year period will demonstrate significantly better psychosocial adjustment upon transfer to secondary school, when compared to those attending control schools
RQ4	H4: Quality of implementation will be associated with improved outcomes in school implementing PATHS
RQ5	H5: Proximal changes in social and emotional competence and the learning environment will be associated with distal improvements in motivation to learn, psychological well-being and (reduced) internalising and externalising difficulties, which in turn will impact upon attendance, academic attainment and exclusions
RQ6	H6: The PATHS curriculum will demonstrate cost-effectiveness

From The PATHS to Success trial, online protocol (2012)

A range of both quantitative and qualitative measures were used to collect data during the project, these were:

- SDQ (teacher and parent version) (Goodman, 1999)
- KidScreen-27 (Ravens-Sieberer, Auquier, Erhart, Gosch, Rajmil, Bruil, et al., 2007)
- CHU9-D (Stevens, 2010)
- SSIS (pupil version) (Gresham & Elliott, 2008)
- Implementer Characteristics Survey (completed by teachers; survey developed by PATHS to Success team)
- Factors affecting Implementation Survey (completed by teachers; survey developed by PATHS to Success team)
- Observations (each teacher observed once teaching a PATHS lesson; observation schedule developed by PATHS to Success team)
- Interviews (with teachers and parents; interview schedule developed by PATHS to Success team)
- Focus Groups (with pupils; focus group schedule developed by PATHS to Success team)

Independence of the current study

Data for the present study was taken from the PATHS to Success trial; however, the present study is a distinct and original piece of research. It is important to acknowledge and describe where the present study has emerged from in the context of the ‘PATHS to Success’ trial, and also to highlight the differences between the present study and larger trial. The following table (6) below highlights the differences between the present study and PATHS to Success trial.

Table 6: *Differences between current doctoral study and the PATHS to Success evaluation*

		Present study	PATHS to Success trial
1	Overview	Full three-year doctoral study with detailed analysis, including thesis.	Five-year project, with final report to the National Institute of Health Research.
2(a)	Aims	To investigate the differences in mental health outcomes and academic attainment between children eligible for FSM and those not in whole sample.	To determine the impact of PATHS on a variety of outcomes for all children in KS2.
2(b)	Aims	To investigate differential gains of the universal SEL intervention PATHS for children eligible for FSM.	
2(c)	Aims	To investigate whether implementation variability of PATHS impacts on differential gains for children eligible for FSM.	
2(d)	Aims	To understand teachers’ perspectives of delivering PATHS in a “real-world” context in order to further explain the implementation variability.	
3	Design	Mixed-methods design focusing on impact for sub-group of participants.	Longitudinal RCT of large group of general population participants.
4(a)	Methods	Confirmatory analysis utilising Multilevel modelling, in order to determine differences for at-risk children.	Multilevel modelling of all participants.

4(b)	Methods	Multilevel modelling with specific cross-level interactions based on identified RQs.	
4(c)	Methods	Qualitative thematic analysis of interviews with a sample of teacher participants	
5(a)	Analysis	Analysis of specific sub-sample groups considered to be in 'at risk' from socio-economic disadvantage.	Intention to treat analysis.
5(b)	Analysis	Analysis of mental health outcomes and academic attainment.	Analysis of a range of social and emotional and academic outcomes.
5(c)	Analysis	Analysis of implementation impact on outcomes for a sub-sample of 'at-risk' children.	Analysis of implementation impact on outcomes for all pupils.
5(d)	Analysis	Qualitative analysis as explanatory of implementation variability.	Analysis of implementation effects on outcomes.
6	Audience	Academic community.	DfE, NIHR, schools, policy makers, academic community.

5.5 Participants

5.5.1 Schools

Schools were recruited to the PATHS to Success trial, based on their location in the Greater Manchester area and willingness to be part of the PATHS to Success trial. All recruited schools are mainstream, state-maintained institutions for children aged 4-11 in the Greater Manchester area. In the initial sample there were 58 schools, however, only 45 schools completed the required baseline data to be eligible for randomisation. Following random allocation, 23 of the recruited schools were assigned to the intervention arm of the project and implemented PATHS, while 22 schools were in the control arm, continuing with their usual practice over the two-year period.

Table 7 below shows the demographic information of these 45 schools compared with the national average.

Table 7: *School demographic information at baseline and national average (Taken from: Department for Education, 2012)*

School variable	National Average	Combined trial sample mean (sd)	PATHS Sample mean (sd)	Control (Usual Practice) sample mean (sd)	Cohen's <i>d</i> (PATHS vs control)
Size – number of full-time equivalent (FTE) students on roll	233.4	300.60 (103.87)	313.26 (111.15)	287.36 (96.47)	.25
FSM– proportion of students eligible for free school meals (%)	19.3	30.49 (19.50)	30.13 (20.12)	30.86 (19.29)	.04
EAL– proportion of students speaking English as an additional language (%)	17.5	22.06 (24.34)	20.63 (24.65)	23.55 (24.51)	.12
SEND– proportion of students with Special Educational Needs or Disability (%)	19.9	16.93 (5.92)	16.59 (5.99)	17.28 (5.96)	.12

Of these 45 schools they served communities experiencing higher than average socio-economic deprivation (30.49% of pupils eligible for FSM compared to the national average of 19.3% - Department for Education, 2012b) and containing slightly higher than average proportion of pupils who spoke English as an additional language is 22.06%, compared with the national average of 17.5% (Department for Education, 2012). The schools in the sample were also slightly larger than the national average. One sample t-tests indicated that there was a statistically significant differences in school size ($t(44)=3.75, p<.001$), % pupils eligible for FSM overall ($t(44)=3.85, p<.001$) and % portion of pupils with SEND ($t(44)=-3.37, p<.001$) between the trial sample and the national average. These slight differences compared with the national average may be due to location, most being urban schools located within the Greater Manchester area. However, the differences are relatively minor so the sample can be considered representative for purposes of generalisation. Moreover, the control and treatment arms

are balanced in terms of characteristics. There were no statistically significant differences between the control and treatment groups in school size [$F(1,43)=.694, p >.05$], % pupils eligible for FSM [$F(1,43)=.016, p >.05$], % pupils EAL [$F(1,43)=.160, p >.05$] and % pupils with SEND [$F(1,43)=.147, p >.05$] as determined by one-way ANOVA. Additionally, as is shown in Table 7, the effect sizes (Cohen's d) of the differences between characteristics of both trial arms are small. Due to attrition over the two year period, for a variety of reasons including change of school management, poor Ofsted inspections and lack of time, 40 schools remained in the project after the two years (23 PATHS and 17 Usual Practice) - see section 6.2.1 of Chapter 6 – Quantitative Results for CONSORT diagram of attrition.

5.5.2 Pupils

At the point of baseline data the number of pupils eligible to participate from the school sample was $n=5218$ (PATHS: $n= 2676$, Control: $n= 2542$). Full details of attrition at various time points will be outlined in further detail in the CONSORT diagram in section 6.2.1 of Chapter 6. Table 8 below outlines the total actual characteristics of the overall pupil sample. As would be expected, these are in line with the school sample proportion per school means above.

Table 8: *Pupil sample characteristics*

	PATHS Schools sample (N)	Control (Usual Practice) Schools sample (N)	% difference between the groups
Gender (% male)	49.9% (1335)	53.0% (1346)	3.1%
Eligibility for FSM (% eligible)	31.2% (836)	27.4% (695)	3.8%
Pupils who speak English as an additional language (EAL) (% EAL)	21.0% (561)	22.3% (567)	1.3%
SEN Provision (% provision)	18.8% (482)	19.9% (508)	1.1%

Table 8 demonstrates that there was balance between the PATHS sample and control sample in order to make a fair comparison. The percentage difference between both trial groups was less than 4% for all characteristics, highlighting the similarities between the groups. This is likely the result of the adaptive stratification (minimisation) procedure, which was conducted as part of randomisation in the main trial, in which trial schools were balanced by proportions of children eligible for FSM and speakers of EAL. This

technique allows for the benefits of randomisation (i.e. exclusion of bias), with the advantage that similarity of the two groups is ensured (Treasure & MacRae, 1998).

5.5.3 Teachers

For the qualitative strand of the study, teacher interviews were used in the analysis. Overall there were 182 teacher participants who were part of the overall evaluation. Of these n=80 met the criteria for inclusion in the current study. The inclusion criteria included:

- Delivered PATHS during the trial
- Available observation data
- Available interview data

This criteria was used to ensure that the qualitative data used in RQ4 was connected and relevant to the implementation data used in RQ3. The sample consisted of a high percentage of female teachers (82.1%), in line with the national average (86.5%⁸). Teachers had an average mean number of years teaching experience of 8.6. Purposive sampling was used in order to select teachers for the final qualitative analysis – this is described in further detail below.

Sampling for qualitative strand (RQ4)

In order to answer RQ4 through qualitative analysis, purposive sampling was utilised for the final sample of teachers whose interviews were coded for analysis. Purposive sampling allows the researcher to minimise the sample size by selecting specific cases that best illuminate and answer the research question (Kemper, Stringfield, & Teddlie, 2003). Malterud, Siersma, & Guassora (2015) also highlight the importance of avoiding saturation, while also ensuring that the sample has been selected appropriately in order to ensure rigorous analysis. A type of purposeful sampling, maximum-variation sampling, was employed through choosing participants based on criterion of maximising variation with the sample (Mertens, 2005b). This approach allows analysis about unique situations, as well as drawing on common aspects across the diverse sample. In the current study the criteria used were:

- Year group – in order to examine any year group differences, teachers from the range of year groups were chosen.

⁸ Taken from Department for Education (2014)

- % of pupils in school eligible for FSM – in order to examine whether teachers in schools in more deprived areas differed from teachers in more affluent schools.
- Implementation (dosage/fidelity/quality) score – in order to get a range of implementer types, teachers with a variety of scores in implementation dosage/fidelity/quality, from low/medium/high were chosen.

24 teachers were identified from the initial sample of 80 available interviews. This allowed for a selection of a small number of participants, in relation to the full sample, to maximise diversity relevant to the research question while avoiding saturation. The sample includes participants that are purposively as varied as possible, in order to allow a full breadth of experience and opinion to be drawn upon (Patton, 2015). In this case, teachers were chosen from schools with a range of percentages of pupils eligible for FSM, as well as a range of implementation variability characteristics. Table 9 below highlights the teacher interviews chosen for analysis and the range of differences between them, based on the criteria described above.

Table 9: Participant data analysed for Qualitative strand after sampling

Teacher code	Year group	School number	% pupils eligible FSM	Dosage score	Fidelity score	Quality score
va6587	6	24	3.6	moderate	moderate	high
uh6793	6	7	4.3	low	moderate	moderate
yj0653	6	9	19.1	moderate	moderate	high
xf7909	6	17	23.2	moderate	moderate	moderate
ti9440	6	36	33.5	low	low	low
ds4876	6	25	48.5	low	moderate	moderate
zj6828	6	38	59.5	low	moderate	moderate
zp5215	4	6	2.6	moderate	high	moderate
bj7479	4	1	8.1	moderate	low	moderate
rd6614	4	14	12.5	moderate	moderate	high
vx6340	4	30	17.2	moderate	high	moderate
fk6332	4	26	21.7	moderate	low	low
ka6448	4	41	42.2	moderate	moderate	low
ia7071	4	25	48.5	low	moderate	moderate
au0531	4	43	50.8	moderate	moderate	high
iu1492	4	39	58.9	moderate	moderate	moderate
eb7097	3	10	8.5	high	moderate	moderate
je9608	3	18	14.3	moderate	low	high
xp6913	3	19	17.2	high	moderate	low
nr3122	3	36	33.5	moderate	moderate	moderate
bw7153	3	32	37.4	high	moderate	moderate
mx2761	3	2	50	moderate	moderate	moderate
my7758	3	13	50.7	moderate	low	high
qp2617	3	5	56.1	moderate	moderate	high

Additionally, as can be seen in table 10 below, the characteristics of the teacher sample used after maximum variation sampling is similar to the overall sample of PATHS teachers so can be considered representative.

Table 10: *Characteristics of teachers identified through maximum variation sampling compared with full sample and national average.*

Characteristics		All PATHS teachers who met criteria (n=80)	Maximum variation sample (n=24)	National average ¹
Gender (% female)		82.1	77.3	86.5
Age (%)	20-29	38.8	45.8	27.1
	30-39	25.0	20.9	30.1
	40-49	10.0	12.5	25.0
	50-59	8.8	12.5	15.6
	60+	0.0	0.0	2.2
	No answer	17.4	8.3	
Mean number of years teaching experience (s.d.)		8.6 (8.9)	8.6 (10.7)	-

¹Taken from Department for Education (2014)

5.6 Measures

The following sections outlines the measures used for each part of the analysis. Section 5.6.1 – 5.6.2 covers the quantitative outcome measures, while section 5.6.3 outlines the measure used in order to determine socio-economic disadvantage. Section 5.6.4 outlines the implementation observation data used to answer RQ3. Finally, Section 5.6.5 covers the qualitative measure used to answer RQ4.

5.6.1. Mental health measure – Strengths and Difficulties Questionnaire

Mental health was measured using the teacher informant report version of the Strengths and Difficulties Questionnaire (SDQ). The SDQ is a brief behavioural screening

questionnaire for 4-16 year olds, designed by Robert Goodman (Goodman, 1997). The SDQ can be completed by parents or teachers of the child, and there is also a self-report version for children aged 11-16; however, due to the school based focus and age of the participant children, this study uses the teacher report version. Furthermore, self-report is not always compatible with resilience research, particularly with child participants. As Fergus and Zimmerman, (2005) note, and has already been discussed in Chapter 2, resilience is not a static quality present in every situation. It is defined by the context, risk, promotive factor, and outcome which may not always be reflected in a self-report measure. Similarly, a teacher may well be able to report on the child as observed in a range of situations, rather than how they are feeling at the particular moment of questionnaire completion. This is supported by research which suggests children may be less reliable in their assessment of their own mental health, with some evidence of under-reporting, particularly with regards behaviour problems (Marsh, Debus, & Bornholt, 2008; Costello, Dulcan, & Kalas, 1985). Additionally, a review of child self-report measures (Deighton et al., 2014) found all had limitations, and none had sufficient psychometric evidence to demonstrate they could measure change over time.

Prior to the development of the SDQ, other similar measures were used to assess a range of children's mental health problems (Elander & Rutter, 1996). However, some of these measures have become dated, including items such as nail biting and thumb sucking, and ignoring important behaviours such as impulsivity-reflectiveness, being victimised, peer relationships and pro-social behaviour. It has also been argued that there is a need to highlight children's strengths and not just their deficits, which the SDQ does (Goodman, 1997; Goodman, 1994). The SDQ also benefits from being relatively brief, containing only 25 items, compared to, for example, another well-established and commonly used measure, the Child Behavior Checklist (CBCL) which contains 118 items on psychopathology alone (Goodman & Scott, 1999). However, despite being much shorter, Goodman and Scott (1999) found strong correlations between the SDQ and CBCL, inferring its psychometric properties were not compromised. The SDQ is a popular tool, being used in both clinical and community settings throughout the world since its publication in 1997. As well as being valued for its brevity, simplicity and validity, unlike many other self-report questionnaires - for example the Youth Self-report (YSR: Achenbach, 1991) - the SDQ is publically available and can be downloaded for free online (<http://www.sdqinfo.org>) (Essau et al., 2012).

Scoring

The SDQ asks about 25 attributes, 10 of which can be considered strengths, 14 of which can be considered difficulties and 1 (“gets on better with adults than with other children”) which is considered neutral (Goodman, 1997). These 25 attributes are divided between 5 scales (4 negative and 1 positive) which contain 5 items each:

- Emotional symptoms (negative) – this contains statements such as “Often complains of headaches, stomach-aches or sickness” “Many worries, often seems worried”
- Conduct problems (negative) – statements such as “Often has temper tantrums or hot tempers” “*Generally obedient, usually does what adults request*”
- Hyperactivity/Inattention (negative) - statements such as “Restless, overactive, cannot stay still for long” “Constantly fidgeting or squirming”
- Peer relationship problems (negative) – statements such as “*Has at least one good friend*”, “Often fights with other children or bullies them”
- Prosocial behaviour (positive) – statements such as “*Often volunteers to help others (parents, teachers, other children)*” “*Helpful if someone is hurt, upset or feeling ill*”.

Each item is marked by the teacher either “Not True”, “Somewhat True” or “Certainly True” on a Likert scale to indicate how far each attribute applies to the child. Somewhat True is always scored as 1, but the scoring of Not True and Certainly True varies with the item – for the four negative scales, positive items are scored 2 for Not True and 0 for Certainly True and for the positive scale, the opposite scoring is given (see appendix 1 for SDQ questionnaire and scoring sheet). The score for each of the five scales is generated by adding up the scores for the five items that make up that scale, giving a figure of between 0 and 10 (Goodman, 1997).

The four negative scales can also be added together to produce a total difficulties scale of 20 items (Youth in Mind Ltd, 2011). However, as previously discussed in section 1.2.2 of this thesis, it has been suggested that dividing the scales into 3 categories (externalising, internalising and pro-social) is beneficial in some instances, particularly for analyses in general population samples, while retaining all five subscales when screening for disorder (Goodman, Lamping, & Ploubidis, 2010). *Internalising* is the combined score of emotional and peer items. *Externalising* is the combined score of behavioural and hyperactivity items. *Pro-social* remains as is (Goodman et al., 2010). Previous studies have found that the five-

factor solution has not always shown to be the best fit for the data, favouring the three-factor solution instead. For example, due to cultural differences, Dickey and Blumberg (2004) were not able to confirm the predicted five component structure, but established a stable three-factor solution (externalising, internalising and pro-social behaviour). Additionally, Essau et al., (2012) found cultural interpretations of wording impacted variations in fit between the three-factor and five-factor model. This indicates that there may be interpretation discrepancies which might be reduced by using the three-factor structure for analyses. Similarly, Riso et al., (2010) also supported utilising a three-factor solution using CFA. Goodman, (2001) note that there was very little overlap between items loading on the internalising scale and externalising scales, suggesting these scales are relatively “uncontaminated” by one another (pg.1343). These points add justification for the use of the three-factor SDQ in the current study, in order to assess any effects on mental health outcomes.

Psychometric properties of the SDQ

It is important to understand the psychometric properties of the SDQ, in order to justify it as an appropriate and valid tool. Key psychometric properties are outlined in Table 11 below:

Table 11: *Psychometrics properties of the SDQ*

Psychometric property	Summary	Evidence
Content Validity	Evidence that the content of a test fully covers the content of the construct it is measuring.	<ul style="list-style-type: none"> • Sensitivity of the SDQ in identifying psychiatric diagnoses, through structured diagnostic interview, as 94.6% and 63.3%, respectively; successful identification over 70% children with externalising and internalising disorders (Goodman, Ford, Richards, Gatward, & Meltzer, 2000)
Construct Validity	The extent to which the measure adequately assesses the concept it intends to.	<ul style="list-style-type: none"> • Correlates highly with Achenbach and Rutter questionnaires (Goodman, 1997; Goodman & Scott, 1999) • Significant correlations between SDQ subscales and Youth Self-report (YSR: Achenbach, 1991) subscales. • Significant correlations ($r=.63$) between UK version of SDQ the Spence Children’s Anxiety Scale (SCAS: Spence, 1997)

Internal Consistency	The general agreement between multiple items that make up a composite score of a measured construct (e.g. conduct problems).	<ul style="list-style-type: none"> • Internal consistency and retest reliability were satisfactory was a mean Cronbach's Alpha (α) for the total difficulties score of 0.73, with the retest reliability (four to six months) of 0.62 (Goodman, 2001). • Further studies examining the psychometric properties of the SDQ have found a similar range ($\alpha=0.70-0.81$) (Essau et al., 2012; Hawes & Dadds, 2004; Muris, Meesters, & van den Berg, 2003; Riso et al., 2010)
Inter-rater Reliability	Refers to the degree of agreement among raters.	<ul style="list-style-type: none"> • Goodman (2001) reported a mean interrater correlation of $r=.34$ based on a meta-analysis of 41 samples (parent-teacher correlations), 14 samples (parent-self correlations) and 21 samples (teacher-self correlations).
Confirmatory Factor Analysis	Multivariate technique used to test how well the measured variables represent the number of constructs.	<ul style="list-style-type: none"> • Support for the five-factor structure solution that corresponds with the hypothesised subscales of hyperactivity-inattention, peer problems, conduct problems, emotional symptoms, and pro-social behaviour reported in studies (Goodman, 2001; Hawes & Dadds, 2004; Muris, Meesters, & van den Berg, 2003) • Further studies suggest the use of the three-factor solution (internalising, externalising and pro-social) as a better fit in some circumstances (e.g. cultural differences) (Dickey & Blumberg, 2004; Goodman, 2001; Riso et al., 2010)

The key psychometric properties outlined in table 9 support the use of the measure in the current study.

5.6.2 Academic attainment measure (National Curriculum tests)

Academic attainment was measured through the National Curriculum tests that pupils sit at the end of Key Stage 1 (Year 2) and Key Stage 2 (Year 6) in England. The tests are administered via schools in May and include English reading test; grammar, punctuation and spelling test and mathematics test. Results for each test are published as scores and corresponding levels – a child's mathematics level is calculated from an aggregation of all the mathematics components. The levels and predictions of where pupils should be in KS2, based on their level, can be seen in Table 12 below. By the end of KS2 most pupils should make be at level 3, with some being at level 2 or level 4 or 5. For some pupils with special educational needs (SEN) they may be working below level 1 on the national

curriculum. The attainment of these pupils is recorded using the performance scales (P Scale). These scales use a performance description across English, mathematics and science.

Table 12: *National Curriculum levels and corresponding age groups*

National Curriculum levels	P Scale	KS1 Year 2 (Age 7)	KS2 Year 6 (Age 11)
Level 8			
Level 7			
Level 6 6a 6b 6c			
Level 5 5a 5b 5c			Exceptional
Level 4 4a 4b 4c		Exceptional	Beyond expectations
Level 3 3a 3b 3c		Beyond expectations	At level expected
Level 2 2a 2b 2c		At level expected	Below expectations
Level 1		Below expectations	
	P8		
	P7		
	P6		
	P5		
	P4		
	P3		
	P2		
	P1		

Adapted from *Assessment and reporting arrangements – Key Stage 2* (Standards & Testing Agency, 2014)

The National Curriculum levels achieved by pupils are converted and published, via the National Pupil Database (NPD), as a “points score” in order to have a continuous scale on which pupils’ progress could be measured (see table 11 below). This is also beneficial for conducting statistical analyses using the National Curriculum data. This is a conversion that has been similarly used in an evaluation of Achievement for All (Humphrey & Squires, 2010), in which the points score scale went from 1 (equivalent to P Level 1) to 65 (equivalent to National Curriculum Level 10a/GCSE A*+), with 2 points of progress being equivalent to 1 sub-level of progress on the National Curriculum (e.g. moving from 2b to 2a). Table 13 below is an adaptation of this points scale, going from 1 to 35, due to the age group of the children participating.

Table 13: *Points score for National Curriculum test levels*

P levels	National Curriculum Test level	Point Score
1		1
2		2
3		3
4		4
5		5
6		6
7	1c	7
8	1b	9
	1a	11
	2c	13
	2b	15
	2a	17
	3c	19
	3b	21
	3a	23
	4c	25
	4b	27
	4a	29
	5c	31
	5b	33
	5a	35

Taken from: Appendix 2 Achievement for All National Evaluation: Final Report (Humphrey & Squires, 2010)

5.6.3 Determining socio-economic disadvantage

In order to identify pupils from socio-economic disadvantaged backgrounds, in order to assess differential gains, eligibility for Free School Meals (FSM) was used. A discussion of the benefits and limitations of using FSM is provided in Chapter 1 (section 1.3.2). As highlighted, measuring socio-economic disadvantage can be very difficult; however, FSM is used often in research as an indicator of socio-economic status and can be considered a proxy for socio-economic disadvantage. Moreover, it is an easily accessible measure through the National Pupil Database (NPD). FSM is a statutory benefit available to children from families that are claiming the following benefits (taken from Department for Work & Pensions, 2013) and indicates low household income:

- Income Support
- Income-based Jobseekers Allowance
- Income-related Employment and Support Allowance
- Support under Part VI of the Immigration and Asylum Act 1999
- The guaranteed element of State Pension Credit
- Child Tax Credit (provided they are not also entitled to Working Tax Credit and have an annual gross income of no more than £16,190)
- Working Tax Credit run-on – paid for 4 weeks after qualification for Working Tax Credit ends
- Universal Credit (currently in place in pathfinder areas only).

FSM is utilised in the current study in order to identify children from low socio-economic backgrounds who may be at risk for poorer outcomes. As discussed in section 1.3.2 of Chapter 1, FSM is a commonly used and appropriate measure of economic disadvantage. RQ1 will allow a confirmatory analysis in order to determine whether eligibility for FSM is associated with poorer mental health and/or academic outcomes in the current study.

5.6.4 Implementation – Observation data

In order to assess the possible mediating influence of implementation variability on outcomes for at-risk children, data from structured observations of PATHS lessons for each participating class/teacher (N=101) is utilised. The observation schedule (see appendix 2) was adapted from previous studies of the curriculum (Domitrovich et al., 2010). Two factual indicators – one each for dosage and reach – were created, with a further ten observer-rated indicators included to assess fidelity, quality, and participant

responsiveness. Lessons were rated (1-10, 10 being the highest score possible). Each indicator aimed to examine the following⁹:

- Fidelity/adherence (e.g. to what extent does the teacher stick to the prescribed lesson plan?)
- Dosage (e.g. is the lesson being delivered in line with the prescribed delivery schedule?)
- Adaptations (e.g. what minor/major adaptations does the teacher make to the lesson, if any?)
- Lesson quality (e.g. how well prepared/engaging/enthusiastic is the teacher in delivering the lesson?)
- Participant responsiveness (e.g. how engaged/interested are the children in the lesson?)
- Reach (e.g. what proportion of the total class is present for the lesson?)

Observations were made by the author and two other Research Assistants (RAs) working on the PATHS to Success project. In order to ensure reliability and validity of observations, pre-observation inter-rater reliability sessions were conducted, using video footage of PATHS lessons being delivered as part of a study conducted in Birmingham (Little et al., 2012). Furthermore, one of the senior members of the evaluation team also moderated 10% of the lesson observations, by observing and comparing post-observation scores alongside the RAs.

Observer-rated data, utilising 127¹⁰ observations conducted over the two-year period in order to meet minimum sample size requirements, was subjected to exploratory factor analysis (EFA) in SPSS using Principal Axis Factoring extraction method (common factor analysis) with Varimax rotation (oblique rotation method) (Humphrey, Barlow, & Lendrum, 2017). This was undertaken in order to streamline analyses, ensure clear differentiation between implementation constructs, avoid collinearity (see section 6.4) and reduce the likelihood of “an unnecessarily complex model that overfits the data, and thus generalises poorly” (Myung, 2000, pg. 190). The EFA identified two distinct factors resulting in procedural fidelity ($\alpha = 0.93$) and quality and responsiveness ($\alpha = 0.93$) respectively (see Appendix 3 for full descriptive statistics and exploratory factor analysis). Bivariate correlation analyses showed that there was clear distinction between these two

⁹ Appendix 3 outlines the actual items as per observation schedule.

¹⁰ The discrepancy between number of teachers in the study over (n=182) and number of observations conducted (n=127) is due to some teacher movement over the course of the two years or teachers being unavailable during observation periods.

factors ($r = .02$, $p = .85$) and from the dosage and reach indicators (quality- dosage, $r = -.02$, $p = .79$; fidelity-dosage, $r = -.04$, $p = 0.64$; quality-reach, $r = .08$, $p = .38$; fidelity-reach, $r = .16$, $p = .07$) (Humphrey et al., 2017). In order to utilise each identified loading value in subsequent analysis, factor scores were generated using the least squares regression approach (Distefano, Zhu, & Mîndrilă, 2009). These factor scores were then converted to z-scores, using overall distribution of scores (see section 6.5.2 for further information regarding z-score conversion) and then categorised as either 'low' (1), 'moderate' (2), or 'high' (3) for each domain (e.g. dosage), as below:

- low = more than 1 SD below the mean
- moderate = between -1- and +1 SD from the mean
- high = more than 1 SD above the mean

These scores were then used as explanatory variables for procedural fidelity and quality and responsiveness in the analyses for RQ3. As discussed in Chapter 4, measuring and quantifying implementation data for the purposes of analysis is a complex issue. The current study uses the categories of low, moderate and high using a distributional cut-point, rather than categorising using arbitrary thresholds based on theoretical ideas of effective implementation, or using a tercile split approach which indiscriminately assigns to a category based on an even split of the data (see section 4.3 for full justification of the approach used in current study).

5.6.5 Qualitative - Interview data

Semi-structured interview protocols were developed by the PATHS project team (see Appendix 4) and conducted with teachers in participating schools at various time points. Interviews lasted approximately 30 minutes and were conducted either in person or via the telephone. The interviews were audio recorded and then transcribed. Names and specific details relating to children and/or schools were removed during transcription in order to maintain appropriate ethical standards (see section 5.9 for ethical considerations). Transcribed data was checked for errors and then uploaded to NVivo software for analysis.

5.7 Procedure

From March until May 2012 schools were recruited to the PATHS to Success project using a variety of means. Firstly, an information conference was held in which representatives from schools (normally Headteachers) could find out more about the project and sign up their school. Some schools were also approached via their Educational Psychologist through Manchester University connections. Information letters were also sent to all schools in the greater Manchester area (appendix 5) and a follow up phone call made in order to confirm participation. From the initial recruitment phase, approximately 58 schools agreed to be part of the project.

In June and July 2012, baseline data was collected from schools. Opt out consent forms were sent to parents, and schools were asked to complete a number of measures for all pupils in Years 3-5 whose parents did not opt out - see table 12 of baseline data collected relevant to current study. Schools were given support to complete these assessments by the research assistants (of which the author was one) if they required it. After baseline, 45 schools had completed enough surveys (teacher report SDQ and pupil surveys) to be randomised as part of the main trial. Schools were randomised as either a PATHS school (undertaking the PATHS curriculum for two years) or a Usual Practice school (continuing with usual practice for two years). After randomisation there were 23 PATHS schools and 22 Usual Practice schools.

Table 14: *Data collected in main trial as relevant to the current study*

Measure/Instrument	Completed by	Outcome	Format	Collected
Teacher SDQ (mental health outcome)	Teacher	Externalising problems, internalising symptoms and pro-social behaviour.	Online survey of 25 items for each pupil in class.	May-July 2012 May-July 2014
National Assessments (academic attainment outcome)	All Pupils (from Year 2 results) Eligible pupils (pupils in Year 6 at end of project)	Mathematics English (grammar, punctuation and spelling)	Pupils sit national curriculum assessments at the end of Year 2 and Year 6.	Year 2 National Assessment results May 2010 Year 6 National Assessment results May 2014
PATHS Lesson observation (implementation)	Research Assistants	Dosage, fidelity/adherence, quality, participant responsiveness, adaptations, reach.	Structured lesson observation (appendix 2) form completed by observer.	November 2012 March 2013 November 2013 March 2014

After an initial full day training session at the start of September, the 23 PATHS schools began to implement the PATHS curriculum with all pupils in Years 3-5, with implementation support from the three research assistants who also acted as PATHS Psychologists (for more information on the PATHS curriculum please see section 3.2). Schools were encouraged to implement PATHS for the recommended two half hour sessions per week, however there was some variation in this. There were also designated field-work blocks throughout the year, during which the research assistants collected additional data on implementation of the PATHS programme (see table 14 for data collected). Semi-structured interviews were also conducted at the same time with teachers. In order to reduce bias, the research assistants collected observation data and conducted interviews at schools other than the ones they were also supporting through the PATHS Psychologist role. Teachers were provided with information regarding how

this implementation data would be used and opt-in consent forms. In May – July 2013 survey data was collected again, in the same way as baseline data.

In September 2013, another initial full day training session was held at the university for any new teachers and Year 6 teachers. PATHS schools then continued to teach PATHS to Years 4-6 pupils, with on-going support from the PATHS Psychologists. Again, there were designated field-work blocks throughout the year in order to collect implementation data, through classroom observations, and conduct semi-structured interviews. This was followed by the last stage of data collection completed in May-July 2014.

Additional pupil and school level data was collected alongside survey data. This data was retrieved from the Department for Education (DfE) databases and included. Once all of the data was collected it was matched to each individual pupil using the pupil's UPN, in order to maintain confidentiality and anonymity of the participants.

5.8 Analytical strategy

5.8.1 Overview

This section provides an overview of the chosen analytical strategy of the current study. As this study is a mixed methods design, the section is divided to discuss both the quantitative and qualitative approaches. The first section examines Multilevel Modelling (MLM), the chosen strategy for analysing the quantitative data, and includes information regarding what MLM is and how it works, as well as justifying its use in the current study. The proceeding section outlines thematic analysis, the chosen strategy for analysing the qualitative data.

5.8.2 Quantitative analysis

What is Multilevel Modelling?

The current study uses Multilevel Modelling (MLM) to analyse data in the quantitative strand. MLM is a statistical method which can be considered an extension of multiple regression in that it aims to assess the amount variance of a dependent variable attributable to the independent variables measured (Field, 2009). MLM takes the next step as it also takes account of the hierarchical (i.e. children within schools) and clustered (i.e. scores within a given school will be correlated) make-up of the data (Tabachnick & Fidell, 2014). In this regard, different levels of variables can be created within the analysis, for example *individual* level variables, such as gender and eligibility for FSM, and *school* level variables, such as proportion of children who speak EAL and proportion of children

eligible for FSM. These levels are hierarchically organised to reflect the individual level variables being nested within the school level. This also allows analyses of both individual and school effects together (Paterson & Goldstein, 1991). MLM also allows the creation of more than two levels of analysis, so, for example, the children who are within the same class will be more similar (and their scores on certain variables are more likely to correlate) than children in different classes, even in the same school. This is particularly true when taking into account implementation of PATHS, as there is inevitable variability from one class to the next. See Figure 9 below for an example of a three-level hierarchical data set

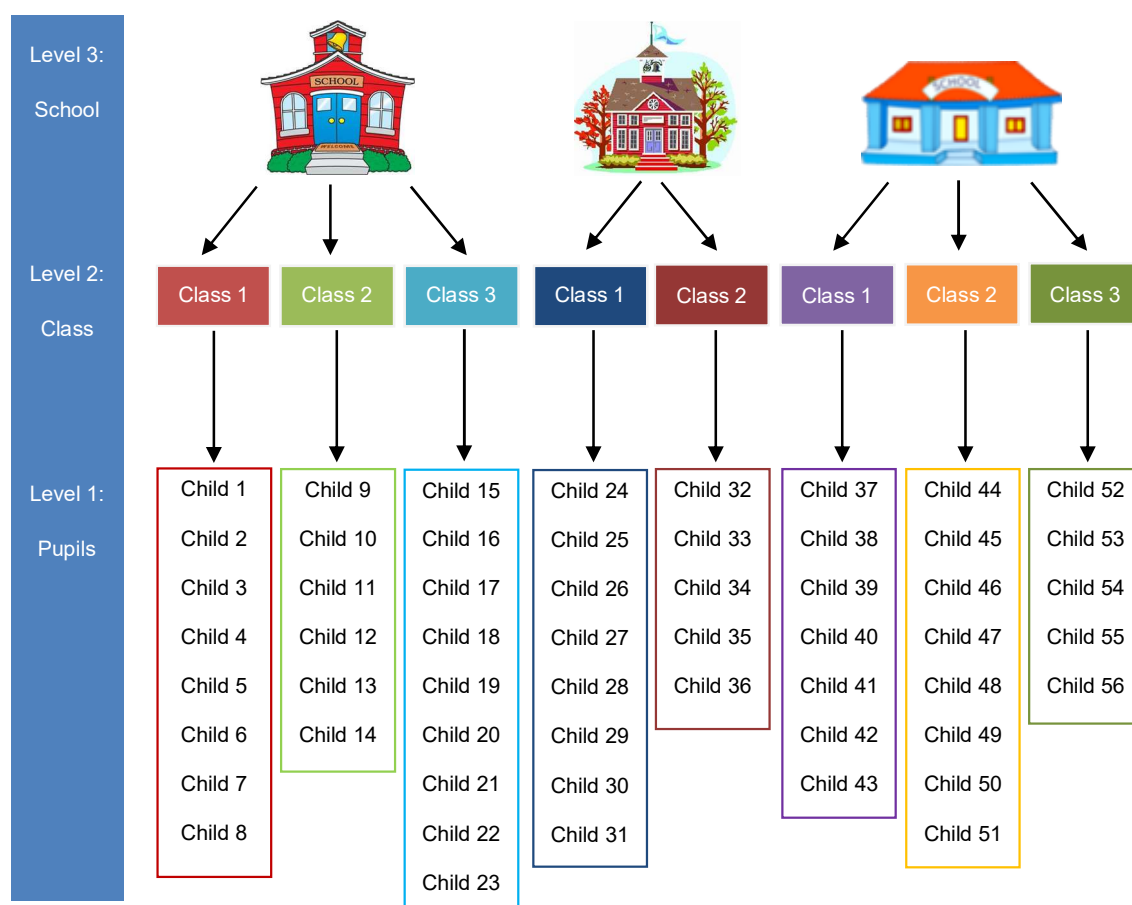


Figure 9: An example of a three-level data set

There are a range of benefits to using MLM. Firstly, by taking into account the hierarchical and clustered nature of data, it allows real world data to be studied with more accuracy. Ignoring the organisation of the data, and treating each individual as an independent entity leads to biased estimates and erroneous results with statistical errors (Heck, Thomas, & Tabata, 2010; Tabachnick & Fidell, 2014). MLM is able to account for the clustering (for example children from the same class/school being more similar to each other than those from different classes/schools) through the contextual (i.e. school level) variables and also relating individual scores by adjusting class/school differences and accounting for the individuals within the school (Field, 2009).

Additionally, using MLM allows for the inclusion of predictor variables to be included at each level of analysis, as well as identifying the variance of each variable, and at each level, making it easy to examine the particular variables of interest, and explore which variables impact most on outcomes. MLM provides an intraclass correlation (ICC) which represents the proportion of variance from total explainable variance at each level of the model, and can be used as a measure of dependency within the data (Field, 2009). If the variance figure is large at the contextual level (i.e. class level) then it suggests that being in that particular class has a large influence on the outcome variable. Therefore, the ICC is a good measure of whether a contextual variable has an effect on a particular outcome (Field, 2009).

The reasons presented above make MLM the ideal analytical tool for the present study. The use of MLM allows prominent factors that impact on outcomes to be highlighted, while taking into account the organisation and nested nature of the data (Twisk, 2006). This is useful in examining the school level and individual level predictors that impact on outcomes in RQs 1 and 2, and also the impact of class level implementation predictors on outcomes in answering RQ3. The following section provides more detail on how each RQ is answered using MLM and the specific variables included in each MLM in the study. The reasons for including these variables is also discussed.

Using Multilevel Models (MLMs) to address the research questions

In order to answer RQ1, MLMs for baseline academic and mental health outcome data were constructed, with FSM included as an explanatory variable at the pupil level. The coefficient effect size for each was analysed to explore the magnitude of their association with the response variable in question (e.g. academic attainment or mental health outcome). To improve analytical rigour, a range of other socio-demographic data, at both

school level (% of pupils eligible for FSM) and individual level (e.g. gender) were included as control variables (see below for full explanation of variables included in the models).

For RQ2, MLMs were used to explore differences at the school (e.g. PATHS vs. control) and individual pupil level (e.g. eligibility for FSM) and their influence on mental health outcomes. In order to answer RQ3, further analysis was used to incorporate classroom level implementation data (e.g. dosage of PATHS) in order to explore any implementation effects on differential gains for mental health outcomes (for children eligible for FSM). Similar analysis was also run in order to examine differential gains of academic attainment using the Key Stage 1&2 National Curriculum tests for the children who were in Year 6 at the end of the project and had sat the Key Stage 2 National tests.

Variables included in the Multilevel Models

The following section includes information of the variables included in the Multilevel Models used in the present study. Table 15 provides a full list of variables included. In order to examine the differential effects of PATHS, trial group variable (whether PATHS or Usual Practice) is included. Furthermore, to examine implementation variability effects, classroom level implementation variables have been included. Additionally, in order to take into account any factors which may also impact on the outcomes of social and emotional learning and academic achievement, contextual and socio-demographic data were also included in the analyses, derived from the National Pupil Database (NPD). This data also allows identification of pupils categorised as socio-economically disadvantaged for the purposes of this study.

School level variables

Contextual school level differences have previously been identified as significant in relation to social and emotional based outcomes. Prior research has reported that school population socio-economic status can have an impact on both individual mental health outcomes (e.g. Goodman, Huang, Wade, & Kahn, 2003) and academic achievement (e.g. Caldas & Bankston, 1997). Similarly, The Conduct Problems Prevention Research Group (2010) found that SEL intervention effects were moderated by school environment, with effects stronger in less socio-economically disadvantaged schools. Furthermore, although there is very limited research on the links between the number of EAL pupils in a school and pupil outcomes, some studies suggest that there may be an impact on academic achievement (e.g. Cho, 2012). Moreover, research has reported a complicated relationship

on the impact of ethnic minority composition in school and a range of outcomes (e.g. Reynolds, 2008). Therefore, there is justification for including school level background variables which may impact on mental health and academic outcomes. However, a key reason these variables were included is because randomisation was balanced on school proportions of FSM and EAL, and the importance of analysing to take account of randomisation method is highlighted in the literature (e.g. Kahan & Morris, 2012). Consequently, in the current study, school level variables of percentage of pupils in school eligible for Free School Meals (FSM) and percentage of pupils in school who speak English as an Additional Language (EAL) have been included in the analysis.

Pupil level variables

As well as eligibility for FSM, which, as discussed in section 5.6.3, has been used in the current study to analyse the differences between pupils from socio-economic disadvantage and their non-disadvantaged peers, gender has also been included as an individual level variable. Gender differences have been commonly identified as significant in both mental health outcomes and academic achievement. Prior research has found that, in general, boys fare worse in externalising problems than girls, and vice versa for internalising symptoms (Leadbeater et al., 1999). Similarly, there is evidence to suggest that there are gender differences in academic achievement in English schools (Department for Education and Skills, 2007). Given the possibility of gender differences in both outcomes, there is clear justification for assessing the role of gender in both mental health and academic outcomes, in order to establish accurate findings in response to the RQs. Additionally, baseline scores were controlled for in RQ2 analysis, given that a strong predictor of post-test score is the individual baseline score.

Table 15: *Table full list of variables included in Multilevel Models*

Variable	Description	Measure	Source	Reason for inclusion	RQ
School Level					
% of pupils eligible for FSM	Proportion of pupils in school receiving Free School Meals (FSM).	Percentage (%)	DfE database	Background data – control for school level variable effects	RQ1&2
% of EAL pupils	Proportion of pupils in school who speak English as an Additional Language.	Percentage (%)	DfE database	Background data – control for school level variable effects	RQ1&2
Trial Group	Indicates which arm of the trial the school is in.	PATHS or Usual Practice (UP)	Project data	To determine effects of PATHS on outcomes	RQ2
Class Level					
Implementation dosage	Level of dosage as prescribed by programme guidance.	Low, moderate or high	Classroom observation	To determine implementation dosage effects on outcomes	RQ3
Implementation fidelity	Level of fidelity as prescribed by programme guidance.	Low, moderate or high	Classroom observation	To determine implementation fidelity effects on outcomes	RQ3
Implementation quality and participant responsiveness	Level of quality/participant responsiveness as prescribed by programme guidance.	Low, moderate or high	Classroom observation	To determine implementation quality effects on outcomes.	RQ3
Individual					
Baseline score	Control of outcome score at pre-test as predictor of outcome score at post-test	Baseline score	Project data	Control for individual performance effects	RQ2
FSM	Indicates whether the pupil is eligible for free school meals (FSM)	Eligible or not eligible	DfE database	To determine differential effects for pupils from disadvantaged backgrounds	All
Gender	Indicates the gender of the individual pupil	Male or female	DfE database	To control for gender effects	All

More information on how to read and interpret Multilevel Models has been provided in section 6.5 of the Quantitative Results chapter.

Cross-level interactions

In order to answer RQ2 and RQ3, cross-level interactions were used within the Multilevel Models. Cross-level interactions allow analyses of whether a lower-level relationship depends on a higher-level factor (Aguinis, Gottfredson, & Culpepper, 2013). For RQ2 analysis, the interaction term used was PATHS*FSM (to test for effects of PATHS for children eligible for FSM) and for RQ3 analysis the interaction terms were Dosage*FSM, Quality*FSM and Fidelity*FSM (to test for implementation variability effects for children eligible for FSM). These interaction terms were set such that the co-efficient output (and accompanying standard error and *p* value) produced in each model represented the estimate of intervention effect. For RQ2, this was specified as “If PATHS, if FSM, at post-test.” For RQ3, an example specified term was “If high dosage (compared to low), if FSM, at post-test”. Implementation-outcome analysis was repeated for procedural fidelity and quality and participant responsiveness, as well as dosage, at high and moderate compared to low.

5.8.3 Qualitative analysis

Thematic analysis

The qualitative strand utilised thematic analysis in order to draw out the key findings from the interview data, building on the findings from the previous research questions in order to ensure a complete representation of effects of implementation on outcomes. Thematic analysis is a method which simultaneously reflects the experiences and reality of participants, whilst also allowing for deeper ideas about the reality to be inferred (Braun & Clarke, 2006). Therefore, it allows a flexible approach to be taken in order to derive the most from the data available, and to build on the findings of the previous research questions. Although compatible with a range of methodological approaches, thematic analysis is well suited to a pragmatic approach due to its flexible and practical application to explore a range of ideas about real experiences (Aronson, 1994).

The analysis takes a predominantly inductive or ‘bottom up’ approach to the data, in that the themes identified are strongly linked to the data. Moreover, as Table 16 below shows, themes were identified during and after the coding process and after familiarisation with data. However, as highlighted by Braun and Clarke (2006), the data is not coded without

some prior theoretical ideas, particularly given the author worked alongside the teachers in implementing the programme so had developed preconceptions relating to this before coding took place. Therefore, the lines of inductive and deductive analysis are somewhat blurred, however, this adds further rigour to the analysis, combining both approaches. A further consideration of thematic analysis is whether themes are identified through a semantic or latent approach when analysing the data (Patton, 1990). A latent approach was taken in the present study in order to examine the underlying ideas, assumptions and conceptualisations of the data. This approach requires a more interpretative examination of the data, but allows broader assumptions and meaning to be derived, further to the descriptive details reported by the participants. Therefore, it allows more links to be made, via the identified themes, with the previous research questions and explanation of the quantitative findings, as per the analytical approach detailed in section 5.3.

In order to ensure a rigorous approach, Attride-Stirling (2001) highlight the need to be clear in the 'how' analysis was undertaken, something often omitted from qualitative research. Braun and Clarke, (2006) suggest six distinct steps, which will be used in this research: data familiarisation, generating initial codes, searching for themes, reviewing themes, defining themes, and writing up. Table 16 details the stages taken in the current study in order to ensure a systematic and robust analysis, utilising Braun and Clarke's, (2006) six steps for thematic analysis. It is important to remember that the six steps outlined are not distinct and are moved between as the analysis is being completed.

Table 16: *Six steps to thematic analysis utilised in the current study*

Step	Summary	Current study – process
1. Data Familiarisation	Importance of ‘immersion’ in data in order to understand breadth and depth of content.	<ul style="list-style-type: none"> • 30/80¹¹ overall interviews of ‘PATHS to Success’ project conducted by author – full familiarity of interview schedule. • Transcripts of sampled interviews read through twice before coding began and annotations made
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.	<ul style="list-style-type: none"> • Systematic approach taken, working through all data to identify interesting aspects of data that link to ideas generated through RQ4 • Broad codes developed as tree nodes in NVivo software, linked to previous RQs (e.g. ‘dosage’).
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.	<ul style="list-style-type: none"> • Codes reviewed and sorted into themes. • All coding collated under appropriate theme.
4. Reviewing themes	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic ‘map’ of analysis.	<ul style="list-style-type: none"> • Refining of themes undertaken. Themes examined and collapsed into each other or separated as necessary. • Level 1: collated extracts for each theme reviewed to establish pattern • Level 2: Thematic ‘map’ created, in order to show relationships between themes (see section 7.2, figure 11)
5. Defining themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.	<ul style="list-style-type: none"> • Thematic ‘map’ refined to summarise results clearly, including ‘sub-themes’ under overarching themes (see section 7.2, figure 12). • ‘Define and refine’ each theme - for each theme a detailed analysis was conducted, with decisions made about what ‘story’ each theme tells and how it relates to RQ4 overall, as well as naming each theme for final analysis.
6. Writing up	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.	<ul style="list-style-type: none"> • Qualitative Results chapter written up for current thesis. • Data extracts chosen to demonstrate prevalence of each theme and included with analytic narrative and argument in relation to RQ4.

Adapted from: *Braun & Clarke (2006)*

¹¹ 30 interviews conducted by author as part of work on *PATHS to Success* trial, with the other 50 being conducted by two other research assistants. Of the 30 conducted, 10 were included in the qualitative strand of the current study via maximum-variation sampling.

As well as taking a rigorous approach to the generation of themes (detailed in table 16), it is important to consider issues of credibility, dependability, transferability, and confirmability in order to ensure the trustworthiness of the qualitative strand (Shenton, 2004). While it would have been beneficial to have another researcher generate themes for the purposes of inter-rater reliability comparison, this was out with the scope and practicality of the current thesis. However, generating themes undertook a rigorous process, as outlined in table 16, and were reviewed by the author's supervisor, who knew the data well as part of the wider project. This is in line with Guba & Lincoln (1989) claim that a study is credible and dependable when it presents authentic descriptions and co-researchers confronted with the experience can recognise it. The data can also be seen as transferable since many teachers undertaking the same experience of delivering PATHS, but in different contexts (schools), were interviewed. As table 16 outlines, the data was reviewed a number of times in order to generate themes over the whole data set, drawing on the range of contexts but with a consistent view of the experience of implementing PATHS. Furthermore, Guba & Lincoln also state that confirmability requires the author to outline exactly how the process of qualitative research has been conducted in a study. In the present study table 16 clearly outlines the steps taken in the analysis, including recognition of both the inductive and deductive approach taken, reinforcing the transparent and rigorous approach.

5.9 Ethical considerations

The data collected from the present study was derived from the larger PATHS to Success study. Ethical approval for the PATHS to Success project was formally granted by the University Ethics Committee in May 2012 (Ref: 11470). The ethical considerations relevant to the present study are addressed below.

Informed consent

Information sheets were distributed to all potential participants at the start of the project (e.g. parents, teachers, pupils) in order to ensure they were fully informed of the study. The information sheets clearly outlined the purpose, methods and intended use of the research, including what, when and how data would be collected. Different sheets were produced appropriate to each type of participant. Consent to participate was operated on a two-tier system. For the quantitative strand, opt-out forms were used (n=133 pupils opted out – this is included in attrition data described in CONSORT diagram in section 6.2.1 below). For the more in-depth, qualitative strand, consent was granted on an opt-in basis, in which teachers signed consent forms prior to interviews being conducted. See

Appendix 6 for all information sheets and consent forms. Examples of how the data would be used were included in the participant information letters. This includes the possibility for articles, publications or books, of which the current thesis falls under. The importance of all data being presented anonymously in any written work is also highlighted, which this thesis complies with. The ethics application for the overall project also included dissemination by thesis, in order to allow PhD research to utilise the data from the study.

Right to withdraw

In all cases, subjects were reminded that participation is voluntary and they have the right to withdraw from the study at any time without providing a reason. An opt-out form was provided along with the information letter to parents, in which parents could send back to either the school or directly to the University of Manchester to indicate they wished for their child to opt-out. Parents could opt out via telephone, email or post if they did not want their child to participate in the study. Teachers were also informed of their right to opt-out at any point (by letting the researcher know, or contacting the University of Manchester) and that completion of the SDQ data was voluntary. Teachers were also provided with information regarding the interview data and were able to opt-out of this strand of data collection if they wished by not signing the consent form. Assent from children who were participants was also sought at every period of data collection and they were also reminded of their right to withdraw.

Anonymity and confidentiality

During the point of sending out information letters to all participants (teachers, parents and pupils), assurances were also given on confidentiality and anonymity. Each participant (pupil and teacher) was allocated a unique password that did not provide detail of which school they were associated with. In all use of data, both background and outcome, information was matched to each participant only using this password – all names and other identifying information were deleted. This database was also password protected. The database which contained the information that could identify each participant was password protected, and only used as a record of who each participant was – data analysis was run using the anonymous password. Teacher surveys were completed predominantly online - teachers entered their individual password in order to access a survey link for each pupil in their class via a secure site, again ensuring confidentiality. Any paper versions of surveys were transferred to the online system and the paper copy destroyed via confidential waste at the university. Additionally, during the

interview strand participants were also reassured as to anonymity and confidentiality, again using unique codes. Any identifying information recorded as part of the interview was deleted during transcription.

Protection of participants

In order to ensure that participants did not feel obliged to undertake any part of the data collection, particularly as often a member of the senior leadership team in the school had committed to be part of the project, the researcher reminded all participants of their right to withdraw at any stage in the process. All participants were given a variety of choices in order to easily opt-out of the study should they wish to do so. Participants were also informed that all data was kept anonymous and confidential. Schools were provided with yearly updates and feedback on the project progress, and were encouraged to ask questions to any one of the research team.

As some of the data collection involved undertaking surveys with children, child protection and safeguarding strategies were also put into place. All project team members (including the author) have an up-to-date Enhanced Disclosure Criminal Records Bureau check for the purposes of working within schools. Furthermore, researchers working in schools familiarised themselves with school safeguarding policies and identified a point of contact within the school in which to report a safeguarding issue should one have arisen.

5.10 Chapter summary

This summary provides an overview of the nine main sections detailed in this chapter outlining the methodology of the current study.

- **Epistemology and pragmatism:** the importance of developing a strong epistemological stance was covered in depth with a rationale and justification for using both a pragmatic approach and MMR.
- **Design:** The design of the current study is as a concurrent component complementarity mixed methods design with a (QUANT + *qual*) focus. This refers to the fact the dominant method in answering key questions is the larger quantitative strand, with a qualitative strand supplementing and providing complementary data.
- **Context of the study:** The contextual details of the *Paths to Success* trial, from which the data was derived for the present study, was included. A clear and detailed outline of the independence of the current study from the main trial was also provided.
- **Participants:** an overview of the participants involved in the current study were presented. Initial recruitment of schools was described, with characteristics of the final sample of both schools and pupils. An overview of the teacher participant sample was provided, with an explanation of maximum-variation sampling that was utilised for the qualitative strand.
- **Measures and instruments:** Details were provided regarding the Strengths and Difficulties Questionnaire used to measure mental health, the National Curriculum tests used to measure academic attainment and eligibility for FSM to measure socio-economic disadvantage. Information regarding independent observer implementation data and interview data was also included.
- **Procedure:** Details of all data collected relevant to the current study was provided, alongside a timeline highlighting progression of data collection.
- **Analytical strategy:** A detailed account of the quantitative analyses (through multilevel modelling) was given, followed by a description of the qualitative analyses (thematic analysis) used in the qualitative strand.
- **Ethical considerations:** An overview of the ethical considerations are explored in the final section, as well as details of how the present study has met these conditions.

Chapter 6:

Quantitative results

6.1 Introduction to chapter

This chapter presents the findings for Research Questions 1-3 of the current study. This is done in a number of different sections, which allows for ease of interpretation of the findings presented. Section 6.2 outlines pupil and school level attrition through the project, using a CONSORT diagram for ease of interpretation. This section also outlines how the issue of missing data was approached. Section 6.3 highlights the data assumptions and requirements for conducting rigorous analysis using multilevel modelling. Section 6.4 outlines key aspects of multilevel modelling, including definitions of terminology and outputs and an explanation of how to interpret the model data. This section also includes details on how to interpret the effect sizes using Cohen's *d*. The final sections 6.5-6.7 presents the findings to each research question. Section 6.5 examines whether socio-economic disadvantage, as measured through eligibility for free school meals, is associated with poorer academic and mental health outcomes in children, utilising baseline data from the project. Section 6.6 moves on to explore whether there are differential gains in mental health and/or academic outcomes for children eligible for free school meals as a result of exposure to PATHS. Finally, section 6.7 takes the previous section one step further by examining whether any differential gains found vary as a function of implementation (specifically examining dosage, fidelity and quality of implementation). Section 6.8 provides a summary of the chapter.

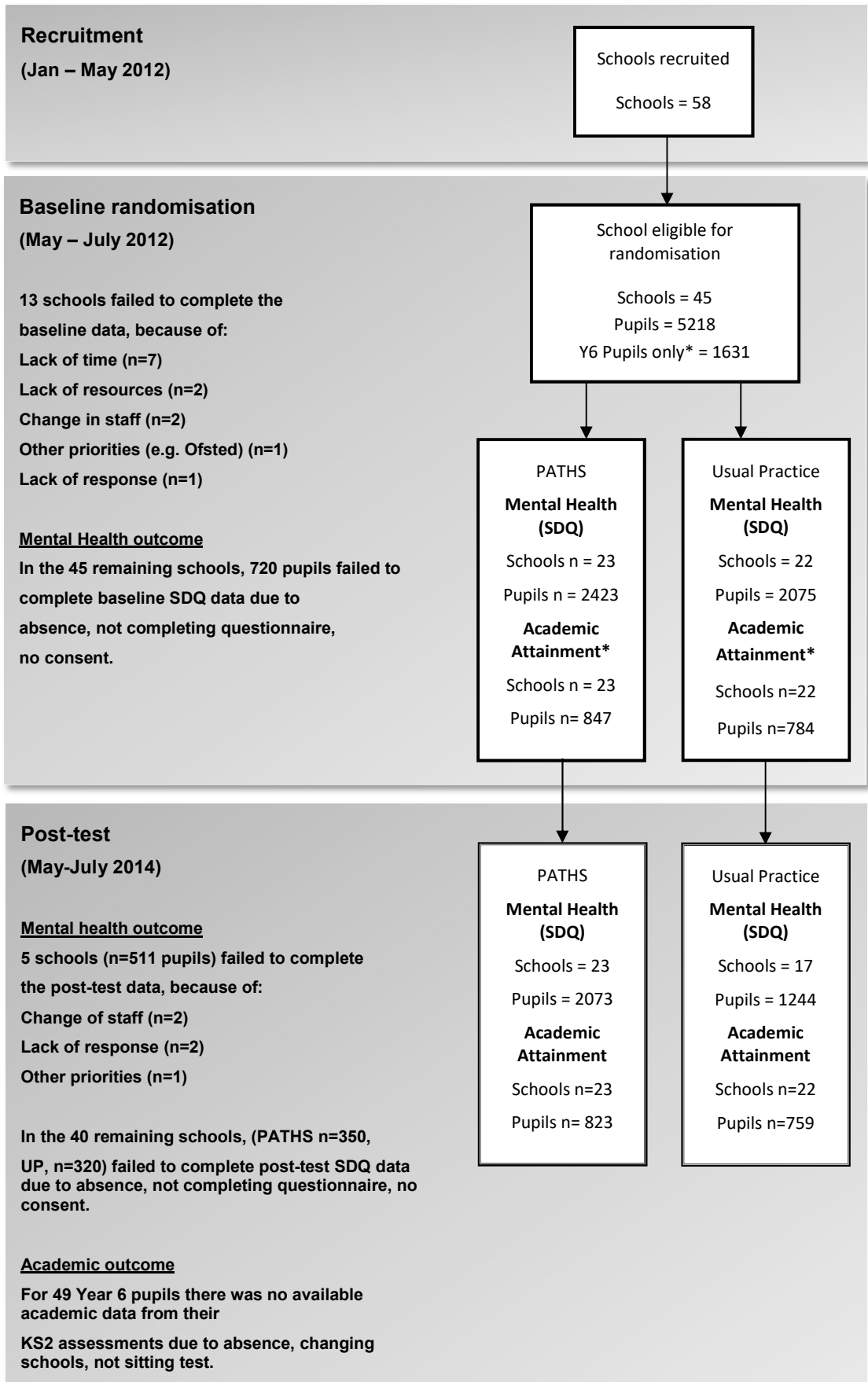
6.2 Missing data

As is extremely common in longitudinal research, particularly a study carried out over a two year period in schools, there was an inevitable reduction in the number of schools, and pupils within them, who participated in the study. This was for a variety of reasons highlighted in the methodology (section 5.5.1). The following section will outline the school and pupil attrition in the present study.

6.2.1 Attrition - CONSORT diagram

The following diagram outlines the flow of recruitment and attrition, at the school and individual child levels with regards to the mental health and academic attainment

outcomes through the project from Baseline (Time 1) to Post-test (Time 2), in accordance with the CONSORT guidelines for cluster RCTs (Campbell, Elbourne, & Altman, 2004; Schulz, Altman, & Moher, 2010). In the interests of clarity separate flow information is provided for the two outcomes (mental health and academic data) to account for the different way in which data were collected. Academic data were collected from the National Pupil Database and mental health data were collected as part of the *PATHS to Success* trial, which resulted in attrition differences. Moreover, analysis of academic gains was only used for pupils in Year 6 at the end of the trial, as these were the only pupils to have sat Key Stage 2 tests – this again is reflected in separate flow information below.



*Academic attainment data for Year 6 pupils only

Figure 10: Flow of schools and children through project for mental health and academic outcomes

The overall withdrawal rate for the Usual Practice (control) schools was 23% (n=5). None of the PATHS intervention schools withdrew during the project. Part of this reason may be due to the ongoing coaching support model described in section 5.7 of the Methodology chapter. In their systematic review of universal mental health interventions for primary aged children, Adi, Killoran, Janmohamed, and Stewart-Brown (2007) highlight that below 30% attrition rate is acceptable, according to the criteria from the NICE Centre for Public Health Excellence Methods Manual. Moreover, The Education Endowment Foundation (EEF), who support and fund much UK education research and have provided security classification ratings for education research, also outline that average attrition rate for trials is 15% and less than 20% is considered acceptable to minimise sample bias (Education Endowment Foundation, 2014). This suggests that the attrition rate in this study is at a low enough level to be considered acceptable. Of the 5 Control schools that withdrew from the project, various reasons not relating to the study were given. These included changes to Head teachers and poor Ofsted reports (see figure 10 for more information).

Including school level (n=5 schools) and pupil level attrition, overall attrition from baseline to post-test is 36% for the mental health outcome, with 64% complete cases remaining. A case was considered valid if:

- The return is from a pupil from the original sample who remained at the participant school.
- Has a complete score (i.e. for both Hyperactivity scale and Conduct Problems scale for externalising score).

School level attrition (n=5) accounted for 11.4% of the overall attrition for the mental health outcome. Excluding the school level attrition, pupil level attrition between post-test and pre-test was 17.5% for the mental health outcome. This may have been for a variety of reasons outlined in figure 10 above. For example, inevitably, there was some pupil mobility during the two-year period, with pupils moving from participating schools to other schools. From their analysis of pupil mobility, Machin, Telhaj, and Wilson (2006) suggest that around 4.4% of pupils make non-compulsory school moves in England over a two year period. There is evidence to suggest that attrition rates are higher among disadvantaged populations (Domitrovich, Cortes, & Greenberg, 2007; Machin et al., 2006). As the sample included a slightly higher than national average number of pupils from disadvantaged backgrounds, it is fair to think the pupil mobility figure was at least that of 4.4%. Another reason for non-returns of data at the pupil level was that some teachers did not fully complete the surveys about those pupils. As the data used was

teacher-reported, pupil absenteeism did not contribute to missing data. However, empty cases in the data returns were also caused by full or partial incompleteness of surveys (e.g. completing surveys for some pupils in the class, but not others, or only completing some sections of the survey for pupils) by teachers. This may be due to teacher absence, time constraints or teacher non-cooperation in completing the surveys. The initial list of pupil participants was created at the start of the project using data from the National Pupil Database of pupils who were in Years 2-4 of the schools who had agreed to participate. This list was then used in subsequent years as the list of pupil participants – teachers were told to disregard pupils on the list who had moved schools, subsequently leading to empty cases in the data set. Teachers mostly completed the survey data (mental health outcome) online in which pupils who were part of the study were named, which meant teachers did not complete surveys for any new pupils who joined their classes. Missing data is discussed in further detail in the next section.

For the academic attainment outcome, the data were derived from pupils ($n=1582$) who sat both their Key Stage 1 (KS1) National Assessments and their Key Stage 2 (KS2) National Assessments. The data were gained from the National Pupil Database for pupils who were participants in the study. Only pupils who were in Year 6 in the last year of the project could be part of the sample as they were the only participants who had sat the KS2 assessments (for more details on academic measure, please see section 5.5.2 in Methodology). As the pupils sat these, regardless of the trial, as part of their school assessment (KS1 was sat when pupils were in Year 2) there was no school level attrition as part of the project for this particular data set. There were some missing cases in the academic outcomes data set ($n=49$, 3.1%), however this was minimal. There may be a variety of reasons for this minimal missing data, for example, a child may have moved from another country during Primary School and not sat the KS1 assessments, or a child may have been absent during the period of the KS1 assessments. A case for academic data was considered valid if:

- It is supplied by a pupil who is from the original sample.
- Has a complete score (i.e. at post-test, has a score for both post-test and baseline)

6.2.2 Missing data analysis

Although the ideal situation is to have complete data sets to work with, it is often the case that there is missing data, particularly in longitudinal studies in which there are a large amount of participants (Twisk & De Vente, 2002). Missing data can occur for many reasons: participants may accidentally miss out questions on questionnaires, or be unable

to complete the questionnaires at each time period. In this particularly study, there was movement of pupils in schools, with some moving schools or areas during the time period, and were therefore unavailable to continue participating in the research. As highlighted by Tabachnick and Fidell (2014), it is not the quantity of missing data that is important, more the patterns of missing data which can impact on generalisability. There are three categories utilised to understand missing data: missing completely at random (MCAR); missing at random (MAR); and missing not at random (MNAR). In the current study, at post-test the overall missing data for the mental health outcome was moderate (n=1181, 36%, as discussed above). Differences between complete and missing cases were examined to establish any pattern to the missingness. Regression analysis was used to predict missingness, whereby each child was coded as providing complete (0) or incomplete (1) mental health outcome data, with other study data as explanatory variables (e.g. gender and FSM) (Pampaka, Hutcheson, & Williams, 2014). The following table details the regression analysis.

Table 17: *Regression analysis to establish pattern to missingness of data*

		Empty model $\beta_{0ij} = 0.365(0.007)$			Test model $\beta_{0ij} = 0.260(0.034)$			
		Co-efficient β	SE	p	Co-efficient β	SE	p	
Pupil		0.232	0.005	<.001	0.187	0.004	<.001	
	FSM (if eligible)				-0.001	0.015	ns	
	Gender (if female)				-0.008	0.014	ns	
	EAL (if yes)				0.113	0.016	<.001	
	SEND	School Action (SA)				-0.007	0.021	ns
		School Action Plus (SAP)				0.005	0.030	ns
		SSEN				0.207	0.068	<.001
	Baseline score	Internalising				0.009	0.002	ns
		Externalising				0.003	0.002	ns
		Pro-social				-0.008	0.004	ns
-2*Loglikelihood		7177.6			5040.70			
		X ² (df = 4, n = 4347) = 2136.9, p<.001						

The analysis indicates that there were only two significant predictors of missingness – speaking English as an additional language and/or having a statement of Special Educational Needs. This is unsurprising as it is possible that these children may have moved schools during the course of the trial (i.e. to attend a specialist school).

Furthermore, it is likely that there was some cross-over amongst these children. The outcome measure at baseline was not a significant predictor of missingness. Therefore, the data in the present study were found to be missing at random (MAR). Data missing at random assumes that missingness is unrelated to the missing values of the outcome variable (Little & Rubin, 2002). For example, in the present study, missing data from the SDQ outcome variable is unrelated to symptoms measured by the SDQ (i.e. pupil self-report may lead to missingness related to symptoms measured, such as externalising behaviours). As the SDQ is teacher-rated, this further reduces the unlikelihood of the connection between this variable and missing data.

The analysis MLWin (the MLM software used in the current study) produces is effectively listwise deletion. This means that any individual who has missing data on any of the variables in the analysis the case is removed (in other words, complete case analysis is undertaken). Listwise deletion is the most frequently applied method for handling missing data in many fields of research, for example in medical and epidemiological studies (Eekhout, de Boer, Twisk, de Vet, & Heymans, 2012). A further option in order to deal with this missing data is the use of multiple imputation (MI), however, the decision not to conduct MI for the present study's analysis was made for a number of reasons. Firstly, there is some criticism in the literature around the use of MI, since it involves adding simulated data to a raw data set, which can raise concerns that the data are being manipulated in some way resulting in an unrepresentative sample (Allison, 2000). Additionally, previous studies have found imputation for missing data made no material difference to the overall results when compared to complete case analysis (e.g. Stallard et al., 2015). Further studies comparing complete case analysis and MI found MI offered no statistical advantage when data was missing at random (Mukaka et al, 2016). This was also supported by the main analysis from the PATHS to Success trial which found the same results for both complete case and MI analysis, again supporting justification for the use of complete case analysis in the current study. Accurately undertaking MI is also beyond with the scope of this thesis, which therefore added to the decision to undertake complete case analysis.

6.3 Data requirements and assumptions for multilevel models

There are a number of data requirements and assumptions which must be considered in order to ensure the validity and rigour of analysis. As multilevel models are an extension of regression, all of the assumptions of regression apply. However, with regards to the assumptions of independent errors and independence, the nested structure of a multilevel model may solve this. For example, if a lack of independence is being caused by a level 2 variable, then a multilevel model should incorporate this in the output (Field, 2009). The following table outlines several assumptions which must be met in order to draw conclusions about a population (Berry, 1993; Field, 2009).

Table 18: Regression and ML assumptions and requirements for analysis – adapted from Field (2009)

Requirement/ assumption	Description	The current study	Assumption met
Variable types	All variables must be either continuous or categorical. Data unbounded (not constrained).	See table 15 for list of variables included in study. All variables are either continuous or categorical.	✓
Non-zero variance	All predictors must have some variance in value (no variance of 0).	See table 15 for list of predictor variables included. All have non-zero variance.	✓
No perfect multicollinearity	No perfect linear relationship between two or more of the predictors. Predictor variables should not highly correlate. Multicollinearity can be assessed via the Variance Inflation Factor (VIF). A VIF value up to 10 can be considered acceptable for analysis (Myers, 1990). Moreover, the reciprocal tolerance level ($1/VIF^2$) are considered acceptable over 0.2 (Menard, 1995).	Using Variance Inflation Factor (VIF) none of the predictor variables highly correlated. The VIF values were within an acceptable range for each model. For all 3 models the range was 1.000 – 1.441. Furthermore, the tolerance level ($1/VIF^2$) ranges from 0.694-1.000, again well within the acceptable range.	✓
Homoscedasticity	Variance of residuals should be constant at each level of predictor variables. The residuals at each level of the predictor(s) should have the same variance.	Lavené's test: $F=1.578$, $p=.209$ indicates that variances across school level were equal for the various analyses (Field, 2009).	✓
Independent errors	There should be no correlation between the residuals of any two observations, also known as a lack of autocorrelation. The Durbin-Watson statistic can be used to test for correlations between residuals. A value of around 2 indicates that the residuals are uncorrelated, with greater than 2 indicating a negative	The Durbin-Watson statistic values for each model ranged from $d=1.241$ – $d=1.971$, this is within the range for the errors to be considered independent and acceptable for analysis. The slightly lower values (i.e. 1.241) in some of the models may indicate minor cases of positive serial correlation, however, the values are still within the	✓

	correlation and less than 2 indicating a positive correlation (Field, 2009). Values less than 1 or greater than 3 indicate that there is correlation and the assumption has not been met (Durbin & Watson, 1951).	acceptable range, and the nested structure of the MLM should account for this (Field, 2009). For full table of Durbin-Watson values relating to study, please see Appendix 8	
Normally distributed errors	The differences between the model and observed data are mostly near to zero (or zero). Any differences must be greater than zero are rare. This assumption relies on the residuals in the model being random, normally distributed variables.	See appendix 9 which shows normally distributed errors on normal probability plots.	✓
Independence	All values of the outcome variable are independent. Each value of the outcome variable is derived from a separate entity.	Each value is based on the individual score from either the teacher-reported SDQ data or academic assessment. Multilevel modelling accounts for the clustered nature of the data and any similarities between individuals in classes or schools.	✓
Linearity	The means of the outcome variable for each increment of the predictor(s) must lie along a straight line, indicating a linear relationship between variables.	See appendix 9 for normal probability plots which indicate the data generally follows a linear trend.	✓

Sample size and power

In order to ensure that any effect in findings is statistically significant, it is important to determine the power of the analysis by considering the minimum detectable effect size (MDES). Ensuring adequate power also minimises the chances of making a Type I or II error (Spybrook et al., 2011). Table 19 below outlines the minimum detectable effect size (MDES) in the current study for both baseline and post-test analysis data.

Table 19: *Minimum detectable effect size at different stages*

Stage	Outcome	N [schools/pupils] (n=intervention;n=control)	Correlation between pre-test & post-test	ICC	Power	Alpha	Minimum detectable effect size (MDES)
Baseline	SDQ	45/4498 (23/2423; 22/2075)	-	0.04	80%	0.05	d=0.20
	Academic	45/1631 (23/847; 22/784)	-	0.08	80%	0.05	d=0.28
Analysis (i.e. available pre- and post-test)	SDQ	40/3317 (23/2073; 17/1244)	0.64	0.04	80%	0.05	d=0.27
	Academic	45/1582 (23/823; 22/759)	0.7	0.09	80%	0.05	d=0.3

Table 19 shows at baseline, with an intra-cluster correlation co-efficient (ICC) of 0.04/0.08, Power at 0.8 and Alpha at 0.05, the minimum detectable effect size (MDES) for the mental health outcome was determined to be 0.20, and for the academic outcome was determined to be 0.28. At post-test, due to attrition described in section 6.2, with an ICC of 0.04/0.09, Power at 0.8 and Alpha at 0.05, the MDES for the mental health outcome was determined to be 0.27 and 0.3 for the academic outcome. Thus, power and sample size for the current study can be considered acceptable. With regards to RQ3, the sub-sample analysis undertaken meant that sample size and power were greatly reduced. This means that the analysis is considered underpowered, and therefore findings should be interpreted with caution. This limitation will be discussed in further detail in section 8.8.1.

6.4 Interpreting the results

The following section will provide a key and information in order to interpret the outputs of the Multilevel Model tables used in order to answer Research Questions 1, 2 and 3.

6.4.1 How to read multilevel model tables

Full, background and empty models: Multilevel models are usually constructed in a series of stages (Heck et al., 2010). Firstly an ‘empty’ (or basic) model is built which shows only the amount of unexplained variance at each level (e.g. school, class or pupil). The figure provided is the inter-class correlation coefficient (ICC). The ICC gives an indication of group homogeneity correlation, for example, are scores within the same school more alike than compared to another school? This figure has then been converted to a percentage figure, showing the proportion of variance at each level compared to the total variance explained (Heck et al., 2010).

In this study a background model was also generated in order to show to what extent variance identified by the empty model is explained by the demographic variables, e.g. school level FSM and child level gender (all demographics included outlined in table 13). This is beneficial as it allows identification and explanation of sources of variance at the different levels before the variable of interest is added (e.g. undertaking PATHS).

Finally, the full model is produced in which the variable of interest (e.g. whether the school has undertaken PATHS) is added to the background model. This allows the significance of the variable(s) of interest to be examined as a predictor after all other variables have been controlled for. The full model can also be compared to the background model using the $-2 \times \log$ likelihood statistic (see below), to compare the relative fit of two competing models, in order to see whether adding in the variable being studied creates a more accurate model overall (Peugh, 2010).

β_{0ij} : This figure is the intercept and is shown in the title column in each multilevel model results table (empty, background and full). The number indicates the overall average score for the average pupil within an average class and school, before any predictor variables have been added. It is therefore possible to calculate a score for a specific individual, by adding to this figure each of the relevant coefficients presented in the table. The standard deviations are also reported in brackets.

Coefficient β : This column reports the amount of variance attributable to each of the predictor variables within the model. For the models used in this study the raw scores of the outcomes variables have been converted to standardised scores (see below for more on z-scores). This is to allow for ease of comparison against the outcomes of SDQ and academic attainment, which provide incomparable raw scores normally. This also means that the coefficient values represent the effect size, Cohen's d (Cohen, 1988), again allowing for ease of interpretation (please see section 6.4.3 below for further explanation of reading effect size). The figure indicates the amount of change in the dependent variable (DV) (e.g. internalising outcome) as a result of difference in the predictor variable (PV) (e.g. eligibility for FSM). For example, a coefficient value of 0.253 in the internalising outcome column (DV) relating to eligibility for FSM (PV) signifies that eligibility for FSM, compared with not eligible for FSM, is associated with a 0.253 standard deviation increase in internalising symptoms. In this example, the positive figure indicates an increase in internalising symptoms, whereas a negative figure would signify a decrease.

Standard error: This refers to the average amount a coefficient varies from the mean value. This is particularly beneficial when comparing the standard error to the coefficient as it can indicate a significant predictor. The significance value is calculated by multiplying the standard error by 1.96 – if the figure produced is larger than the coefficient then the variable is a non-significant predictor.

p (significance statistic): This column provides the statistical significance of the coefficients. The p value is produced by determining the t statistic, by dividing the coefficient by its standard error, and calculating with the relevant degrees of freedom.

-2*log likelihood: This measure provides a value which assesses the fit of the model. The statistic is calculated by summing the probabilities associated with the predicted and actual outcomes (Tabachnick & Fidell, 1996). It is used to compare models, for example empty to background or empty to full. A large value of the log-likelihood statistic indicates poorly fitting statistic models, due to more unexplained variance and non-significant predictors (Field, 2009). The multilevel model tables in this study report the log-likelihood value comparing the background model to the full model – calculations comparing the empty to background model were also run. The background/empty to full model is an important comparison in the analysis because this determines if model fit is significantly increased by adding the variable of interest (e.g. PATHS variable at the school level).

X² (Chi Square statistic): This statistic measures whether there is a significant change between two models (e.g. empty and background or background and full). A *p* significance value can be calculated by comparing the -2*log-likelihood values, and indicates whether the model is a significantly better fit when including certain predictors. In models which have a non-significant *p* value, this is a reflection of a poor model fit, which may indicate the inclusion of predictors (i.e. included as part of the research questions) which are non-significant, and do not fully explain the variance.

In order to make MLM tables easier to interpret only the full model is reported in the results section, with the -2*log likelihood statistic indicating model fit comparing empty to full.

6.4.2 Standardised scoring (z-scores)

In order to make the data easier to read and interpret, particularly across two outcome measures (SDQ and academic assessments) which have different scoring systems, the data has been standardised, through converting raw scores to z-scores. This means that the data are centred around a mean value of 0 with a standard deviation of 1. This is calculated by taking each raw score and subtracting from the mean of all. This number is then divided by the standard deviation, to ensure the data has a standard deviation of 1 (Field, 2009). Furthermore, this facilitates ease of interpretation of treatment effects, as the coefficient associated with treatment allocation in each model is essentially the same as Cohen's *d*.

6.4.3 Interpreting effect size (Cohen's *d*)

The use of effect size (ES) is beneficial as it provides a simple way of quantifying the difference between two groups and allows further understanding of results over the use of statistical significance alone - the ES focuses on the size of the difference, rather than confounding with sample size (Coe, 2002). In the current study, ES (Cohen's *d*) is particularly useful in interpreting effectiveness of the intervention. It allows direct comparison of effect size within and across models as well as being applicable to any outcome measured – this is further useful when understanding the difference between unfamiliar scores, such as those produced by the SDQ. The findings for the current study will be reported in ES. Cohen's *d* is one of a number of effect size metrics (e.g. Hedge's *g*) but is the most commonly used and easy to interpret (Durlak, 2009).

Interpreting effect sizes is also relatively straight forward as they can be converted into statements about the overlap between two samples, in terms of a comparison of percentiles. For example, an ES of 0.4 means that the average person in the experimental group is 0.4 standard deviations above the average person in the control or other group, and thus exceeds scores of 66%. Table 20 provides an overview of conversions of effect sizes (column 1) to percentiles (column 2) and the equivalent change in rank order for a group of 25 (column 3), assuming Normal distribution.

Table 20: *Interpretations of effect sizes – Adapted from Coe (2002)*

Effect Size (ES)	Percentage of control group who would be below average person in experimental group	Rank of person in a control group of 25 who would be equivalent to the average person in experimental group
0.0	50%	13 th
0.1	54%	12 th
0.2	58%	11 th
0.3	62%	10 th
0.4	66%	9 th
0.5	69%	8 th
0.6	73%	7 th
0.7	76%	6 th
0.8	79%	6 th
0.9	82%	5 th
1.0	84%	4 th
1.2	88%	3 rd
1.4	92%	2 nd
1.6	95%	1 st
1.8	96%	1 st
2.0	98%	1 st (or 1 st out of 44)
2.5	99%	1 st (or 1 st out of 160)
3.0	99.9%	1 st (or 1 st out of 740)

A further way to interpret effect sizes is the more commonly used categorisation of ‘small’, ‘medium’ and ‘large’, which allows comparison to effect sizes that are familiar. Cohen (1969, p.23) describes a ‘small’ effect size as that being above 0.2, a ‘medium’ effect size as that being above 0.5, and a ‘large’ effect size as that being above 0.8. However, these terms have also been met with caution, particularly if considered out of context. It has also been highlighted that the effectiveness of a particular intervention can only be interpreted in relation to other interventions which aim to produce similar effects

(Leppink, O'Sullivan, & Winston, 2016). For example, with regards academic achievement, a small increase may produce a 'small' effect size, however this may be practically significant in the overall context. Therefore, while these terms are useful in understanding a general trend of ES, they must be carefully considered overall.

6.5 Research question 1: Is socio-economic disadvantage associated with risk of poorer academic and/or mental health outcomes in children?

The aim of this section is to answer Research Question 1 with regards whether there is a difference in mental health outcomes and academic attainment between children who are from socio-economically disadvantaged backgrounds and their peers. Baseline data were used for all children involved in the PATHS to Success trial. For ease of reporting and interpretation, mental health outcomes and academic outcomes have been separated. Multilevel models were conducted, controlling for school level variables of amount of children eligible for Free School Meals (FSM) and amount of children who speak English as an additional language (EAL). Gender was also included as a variable on the pupil level. Justification for the inclusion of these variables is described in section 5.8.2 of the Methodology chapter.

6.5.1 Descriptive statistics

Table 21: Mean and standard deviations for the five outcome raw scores at baseline for pupils eligible for FSM and pupils not eligible for FSM

	FSM eligible		Non FSM eligible	
	Mean score	Standard Deviation (sd)	Mean score	Standard Deviation (sd)
Internalising symptoms	3.4	3.4	2.6	3.0
Externalising problems	5.4	4.8	3.6	4.1
Pro-social behaviour	7.3	2.6	7.7	2.4
Academic (Mathematics)	13.8	3.8	15.8	3.6
Academic (English)	13.1	4.2	15.3	3.8

Table 21 displays the mean and standard deviation of raw scores for all 5 outcome measures for pupils eligible and not-eligible for FSM. Internalising symptoms and externalising problems are scored out of 20 each, while pro-social behaviour is scored out of 10. For more information on academic scoring, see section 5.6.2. Table 21 shows that for both internalising symptoms and externalising problems, the mean scores were higher for children eligible for FSM than those not eligible for FSM. For the pro-social behaviour outcome, the mean score for children who were not eligible for FSM was slightly higher than for those eligible for FSM. Additionally, Table 21 highlights that mean

scores in both academic measures were lower for children eligible for FSM than their non-eligible peers.

6.5.2 MLM analyses

Table 22: MLM using baseline data examining the association between eligibility for FSM and teacher-report SDQ

		Internalising symptoms $\beta_{0ij} = -0.116 (0.079)$			Externalising problems $\beta_{0ij} = -0.133 (0.057)$			Pro-social behaviour $\beta_{0ij} = -0.270 (0.070)$		
		Co-efficient β	SE	p	Co-efficient β	SE	p	Co-efficient β	SE	p
School		0.065 (6.6%)	0.016	<.001	0.029 (3.3%)	0.008	<.001	0.050 (5.7%)	0.013	<.001
	FSM	-0.000	0.002	ns	0.003	0.002	ns	0.001	0.002	ns
	EAL	0.000	0.002	ns	-0.002	0.001	ns	-0.002	0.002	ns
Pupil		0.922 (93.4%)	0.020	<.001	0.844 (96.7%)	0.018	<.001	0.828 (94.3%)	0.018	<.001
	Gender (if female)	0.056	0.029	.027	-0.600	0.028	<.001	0.696	0.028	<.001
	FSM (if eligible)	0.253	0.036	<.001	0.355	0.034	<.001	-0.184	0.034	<.001
-2*Loglikelihood		12072.97			11661.16			11599.29		
		X ² (df = 3, n = 4347) = 483.28, p <.001			X ² (df = 3, n = 4347) = 527.11, p <.001			X ² (df = 3, n = 4347) = 424.16, p <.001		

The results show that there is a significant difference between children eligible for FSM and their non-eligible peers in all three mental health outcomes. Being eligible for Free School Meals (FSM) is a significant risk factor for poorer scores on internalising symptoms (ES=0.253, $p < .001$). Similarly, pupils who are eligible for FSM are significantly more likely to suffer greater externalising symptoms than pupils who are not eligible for FSM (ES=0.355, $p < .001$). The effect size for poorer outcomes in externalising symptoms is the largest of the three mental health outcomes. Finally, pupils who are eligible for FSM score significantly less on the pro-social outcome (ES=-0.184, $p < .001$).

The following table presents the MLM analysis for differences between children from disadvantaged backgrounds in academic outcomes compared with their peers.

Table 23: MLM using baseline data examining the association between eligibility for FSM and academic data

		Mathematics			English		
		$\beta_{0ij} = 0.330 (0.083)$			$\beta_{0ij} = 0.150 (0.075)$		
		Co-efficient β	SE	p	Co-efficient β	SE	p
School		0.051 (5.6%)	0.017	<.001	0.036 (3.9%)	0.014	<.001
	FSM	-0.008	0.002	<.001	-0.007	0.002	<.001
	EAL	-0.003	0.002	ns	-0.002	0.001	.03
Pupil		0.894 (94.4%)	0.033	<.001	0.892 (96.1%)	0.033	<.001
	Gender (if female)	-0.017	0.049	ns	0.336	0.049	<.001
	FSM (if eligible)	-0.357	0.060	<.001	-0.390	0.060	<.001
-2*Loglikelihood		4178.54			4166.16		
		X ² (df = 3, n = 1516) = 165.83, p <.001			X ² (df = 3, n = 1516) = 216.96, p <.001		

Pupils who are eligible for FSM score significantly less in Key Stage 1 Mathematics (ES=-0.357, p=<.001) and English (ES=-0.390, p=<.001). This difference in scores between pupils eligible for FSM and those not is even more pronounced than the mental health outcomes.

6.6 Research question 2: Are there differential gains in mental health and/or academic attainment outcomes for at-risk children as a result of exposure to the PATHS curriculum?

The aim of this section is to present the analysis which answers research question 2, regarding differential gains in mental health and academic outcomes for children eligible for FSM after undertaking the PATHS curriculum over a two year period, compared with children eligible for FSM who have undertaken their school's usual practice. Multilevel models were fitted, again controlling for variables at the school level and pupil level that may impact on the outcome data. Baseline scores were included to control for the outcome score at pre-test as predictor of outcome score at post-test. This allows for analysis of intervention effects after controlling for the pupils' starting points (which will all be different). Therefore, improving the robustness of the analysis in understanding the findings through exposure to the intervention. In these models, cross-level interactions were added in order to identify the relationship between two variables (in this instance PATHS and eligibility for FSM) on outcomes (see section 5.8.2 of Methodology chapter for further information regarding use of interaction terms).

6.6.1 Descriptive statistics

Table 24: Mean and standard deviations for the five outcome raw scores at post-test for pupils eligible for FSM and pupils not eligible for FSM in both trial arms.

	PATHS				Usual Practice			
	FSM		Non FSM		FSM		Non FSM	
	Mean score	Standard deviation (sd)	Mean score	Standard deviation (sd)	Mean score	Standard deviation (sd)	Mean score	Standard deviation (sd)
Internalising symptoms	3.0	3.1	2.3	2.9	2.8	3.4	2.2	3.0
Externalising problems	4.5	4.4	3.0	3.5	4.0	3.8	3.1	3.6
Pro-social behaviour	7.6	2.5	8.0	2.2	7.3	2.3	7.8	2.4
Academic (Mathematics)	27.5	5.4	30.0	5.2	26.6	5.0	29.6	5.1
Academic (English)	27.3	4.5	29.5	3.7	26.7	4.5	29.2	4.1

Table 24 presents descriptive statistics for post-test data in relation to RQ2. The table shows that, at post-test, pupils eligible for FSM have a higher mean score on both internalising symptoms and externalising problems, lower mean scores in pro-social behaviour, and lower mean scores in maths and English than their non-eligible peers, in

both arms of the trial. Furthermore, overall, mean scores for the academic outcomes are higher for the PATHS group compared to the Usual Practice group for both pupils eligible for FSM and those not eligible.

6.6.2 MLM analyses

The following table presents the MLM analysis examining differential gains in mental health outcomes for children from socio-economically disadvantaged backgrounds as a result of exposure to PATHS.

Table 25: MLM examining differential gains for pupils eligible for FSM on teacher-report SDQ.

		Internalising symptoms $\beta_{0ij} = 0.025 (0.089)$			Externalising problems $\beta_{0ij} = 0.136 (0.083)$			Pro-social behaviour $\beta_{0ij} = 0.285 (0.072)$		
		Co-efficient β	SE	<i>p</i>	Co-efficient β	SE	<i>p</i>	Co-efficient β	SE	<i>p</i>
School		0.043 (4.8%)	0.013	<.001	0.041 (7.2%)	0.011	<.001	0.026 (3.4%)	0.008	<.001
	FSM	-0.004	0.002	ns	-0.002	0.002	ns	0.003	0.002	ns
	EAL	0.001	0.002	ns	0.001	0.002	ns	-0.002	0.001	ns
	If PATHS	0.030	0.083	ns	-0.016	0.078	ns	0.075	0.068	ns
Pupil		0.847 (95.2%)	0.021	<.001	0.532 (92.8%)	0.013	<.001	0.736 (96.6%)	0.018	<.001
	Gender (if female)	-0.030	0.033	ns	-0.231	0.027	<.001	0.396	0.033	<.001
	FSM (if eligible)	0.127	0.068	0.03	0.038	0.054	ns	-0.147	0.063	<.001
	Baseline score	0.355	0.017	<.001	0.626	0.014	<.001	0.371	0.017	<.001
Interactions										
	PATHS* FSM	0.103	0.083	ns	0.165	0.066	<.001	-0.016	0.077	ns
-2*Loglikelihood		8667.568			7180.587			8207.403		
		X ² (df = 6, n = 3222) = 1498.26, p<.001			X ² (df = 6, n = 3222) = 2988.18, p<.001			X ² (df = 6, n = 3223) = 1934.25, p<.001		

The model shows that the main effect of PATHS for all pupils is null for all three outcome variables. The cross-level interactions show that there is no significant impact on internalising (ES = 0.103, ns) or pro-social (ES = -0.016, ns) outcomes after undertaking PATHS for children eligible for FSM. However, the analysis shows that being eligible for FSM and being in the intervention group is associated with *higher* externalising symptoms at post-test (ES = 0.165, p=<.001).

The following table presents the MLM analysis for examination of differential gains in academic outcomes for children from socio-economically disadvantaged backgrounds as a result of exposure to PATHS.

Table 26: MLM examining differential gains for pupils eligible for FSM on academic data.

		Mathematics			English		
		β_{0ij} 0.038 (0.071)			β_{0ij} 0.066(0.070)		
		Co-efficient β	SE	p	Co-efficient β	SE	p
School		0.029 (5.8%)	0.009	<.001	0.031 (7.5%)	0.009	<.001
	FSM	-0.001	0.002	ns	-0.002	0.002	ns
	EAL	0.003	0.001	<.001	0.002	0.001	<.001
	If PATHS	0.046	0.069	ns	-0.027	0.067	ns
Pupil		0.472 (94.2%)	0.017	<.001	0.387 (92.5%)	0.014	<.001
	Gender (if female)	-0.116	0.036	<.001	-0.032	0.033	ns
	FSM (if eligible)	-0.119	0.064	.03	-0.133	0.058	ns
	Baseline score	0.697	0.019	<.001	0.743	0.017	<.001
Interactions							
	PATHS*FSM	-0.025	0.084	ns	0.021	0.077	ns
-2*Loglikelihood		3211.239			2918.443		
		X ² (df = 6, n = 1516) = 1188.30, p<.001			X ² (df = 6, n = 1516) = 1462.96, p<.001		

Overall, there is no main effect of PATHS or cross-level effect for pupils eligible for FSM on the academic outcomes. Both the mathematics (ES=-0.025, ns) and English (ES=0.021, ns) scores yielded non-significant results.

6.7 Research question 3: Do any differential gains vary as a function of implementation (e.g. dosage, fidelity and quality/responsiveness)?

The aim of this section is to present the exploratory analysis in relation to research question 3, which examined if there were any differential gains as a function of implementation variability (dosage, fidelity and quality/responsiveness). As discussed in section 5.6.4 of the Methodology chapter, implementation categories of high, moderate and low were formed for each aspect of implementation, which was then included in the multilevel analysis (for comprehensive detail regarding the formation of these categories, please see section 5.6.4). School level variables were removed from these models as analyses during RQ2 showed that school level factors did not explain much of the variance. Furthermore, due to the more complex nature of the analysis for RQ3, there was a risk of “overfitting” models, through inclusion of too many parameters in relation to the number of observations and violating parsimony (Hawkins, 2004). With regards RQ3, the potential for overfitting was further reduced by conducting two-level models, with class and individual levels, since these were the focus on the analysis for this RQ (Snijders, 2005). As per RQ2 analysis, cross-level interactions were included in the models in order to identify the relationship between two variables on the class and child level (in this case classroom implementation data and pupil eligibility for FSM) on outcomes (again, see section 5.8.2 of Methodology chapter for further information regarding use of interaction terms).

6.7.1 Descriptive statistics

Table 27: Mean and standard deviations (sd) – implementation variability on five outcome raw scores at post-test for pupils eligible for FSM and pupils not eligible for FSM

	Dosage			Fidelity			Quality/responsiveness			
		Low Mean (sd)	Moderate Mean (sd)	High Mean (sd)	Low Mean (sd)	Moderate Mean (sd)	High Mean (sd)	Low Mean (sd)	Moderate Mean (sd)	High Mean (sd)
Internalising symptoms	FSM	2.4 (3.1)	2.8 (3.3)	3.6 (3.6)	2.1 (2.7)	3.1 (3.5)	2.7 (2.9)	2.8 (2.4)	3.1 (3.3)	2.4 (3.2)
	Non-FSM	1.8 (2.6)	2.3 (2.8)	2.5 (3.1)	2.4 (2.7)	2.4 (3.0)	2.0 (2.3)	2.7 (3.2)	2.3 (2.9)	1.8 (2.5)
Externalising problems	FSM	2.9 (3.7)	4.8 (4.3)	5.1 (5.0)	4.6 (4.8)	4.6 (4.4)	4.1 (4.0)	4.4 (5.0)	4.6 (4.1)	4.5 (4.7)
	Non-FSM	2.4 (3.3)	2.9 (3.5)	3.2 (3.4)	3.2 (3.2)	3.0 (3.5)	2.6 (3.1)	3.4 (4.0)	3.0 (3.4)	2.3 (3.3)
Pro-social behaviour	FSM	8.6 (2.1)	7.4 (2.5)	7.5 (2.6)	7.6 (2.4)	7.6 (2.5)	8.0 (2.3)	8.0 (2.4)	7.5 (2.6)	7.9 (2.3)
	Non-FSM	8.4 (2.2)	8.0 (2.1)	7.6 (2.3)	8.3 (2.1)	7.9 (2.2)	8.2 (2.0)	8.2 (2.0)	7.8 (2.3)	8.5 (1.9)
Academic (maths)	FSM	26.9 (5.3)	27.1 (5.8)	28.3 (4.4)	28.2 (4.4)	27.2 (5.6)	29.0 (3.5)	28.0 (4.2)	27.1 (5.7)	31.0 (3.5)
	Non-FSM	30.2 (4.5)	30.3 (5.4)	28.4 (4.3)	29.7 (4.4)	30.0 (5.1)	31.0 (9.1)	29.4 (4.3)	29.9 (5.1)	31.9 (6.6)
Academic (English)	FSM	26.8 (5.5)	27.2 (4.0)	27.9 (4.5)	28.3 (5.0)	27.0 (4.4)	30.0 (3.0)	27.7 (5.0)	27.2 (4.4)	28.0 (1.7)
	Non-FSM	29.5 (4.1)	29.8 (3.5)	28.0 (3.4)	30.4 (3.4)	29.3 (3.7)	30.6 (4.0)	29.3 (4.0)	29.3 (3.6)	31.5 (3.1)

Table 27 presents the means and SD in relation to RQ3. The descriptive statistics illustrate that there is a small amount of variation as a function of implementation (in low, moderate and high classrooms). High and moderate dosage classrooms are associated with higher mean scores in externalising behaviours for children eligible for FSM, compared with low dosage classrooms. The overall pattern, as expected, shows that children eligible for FSM have higher mean scores in externalising problems and internalising symptoms and less in pro-social behaviour and academic outcomes than non-eligible children in almost all implementation categories. Exceptions are in low fidelity classrooms, the mean score for children eligible for FSM is slightly less on internalising symptoms than that for non-eligible children, and in low dosage classrooms, the mean score for children eligible for FSM is slightly higher in pro-social behaviour, however the differences are very small.

6.7.2 MLM analyses

The following table presents MLM analysis for the associations between implementation variability and mental health outcomes for children eligible for FSM.

Table 28: MLM examining the relationship between implementation variability and differential gains for pupils eligible for FSM on teacher-report SDQ.

		Internalising symptoms $\beta_{0ij} = -0.488(0.164)$			Externalising problems $\beta_{0ij} = -0.665(0.129)$			Pro-social behaviour $\beta_{0ij} = -0.998(0.184)$		
		Co-efficient β	SE	p	Co-efficient β	SE	p	Co-efficient β	SE	p
Class		0.102 (12.1%)	0.021	<.001	0.062 (11.9%)	0.013	<.001	0.137 (18.7%)	0.025	<.001
	Implementation Dosage (if high)	0.344	0.155	<.001	0.326	0.121	<.001	-0.479	0.165	<.001
	Implementation Dosage (if moderate)	0.208	0.130	<.006	0.205	0.102	0.03	-0.234	0.138	0.05
	Implementation Quality (if high)	-0.268	0.143	<.003	-0.212	0.112	0.03	-0.042	0.153	ns
	Implementation Quality (if moderate)	-0.139	0.118	ns	-0.048	0.092	ns	-0.140	0.126	ns
	Implementation fidelity (if high)	-0.005	0.176	ns	-0.075	0.138	ns	0.046	0.188	ns
	Implementation fidelity (if moderate)	0.058	0.135	ns	0.053	0.106	ns	-0.049	0.146	ns
Pupil		0.744 (87.9%)	0.024	<.001	0.459 (88.1%)	0.015	<.001	0.594 (81.3%)	0.020	<.001
	Gender (if female)	-0.023	0.040	ns	-0.248	0.033	<.001	0.396	0.039	<.001
	FSM (if eligible)	-0.085	0.163	ns	-0.032	0.128	ns	-0.001	0.147	ns
	Baseline score	0.113	0.007	<.001	0.142	0.004	<.001	0.157	0.008	<.001
Interactions										
	Dosage (if high)*FSM	0.154	0.157	ns	0.142	0.123	ns	-0.016	0.141	ns
	Dosage (if moderate)*FSM	-0.065	0.132	ns	0.114	0.104	ns	-0.068	0.119	ns
	Quality (if high)*FSM	0.013	0.158	ns	0.224	0.124	0.04	0.011	0.143	ns
	Quality (if moderate)*FSM	0.052	0.130	ns	0.191	0.102	0.04	-0.102	0.117	ns
	Fidelity (if high)*FSM	0.284	0.197	ns	-0.142	0.155	ns	-0.055	0.179	ns
	Fidelity (if moderate)*FSM	0.307	0.155	0.03	-0.044	0.122	ns	-0.028	0.140	ns
-2*Loglikelihood		5037.321			4102.645			4640.546		
		X ² (df = 8, n = 1934) = 1063.57, p <.001			X ² (df = 8, n = 1934) = 2102.64, p <.001			X ² (df = 8, n = 1935) = 1371.17, p <.001		

The cross-level interaction analysis show no effect of implementation dosage on outcomes for pupils eligible for FSM. PATHS lesson implementation quality was not associated with significant differences on internalising or pro-social outcomes for pupils eligible for FSM. However, high and moderate quality lessons were associated with *increased* externalising outcomes for children eligible for FSM, when compared to low quality (high: $ES=0.224$, $p=0.04$; moderate: $ES=0.191$, $p=0.04$). This is in contrast to an interesting finding from the analysis, which showed that for main effect (i.e. all pupils), high quality lessons were associated with lower externalising problems ($ES=-0.212$, $p=0.03$) and internalising symptoms ($ES=-0.268$, $p=0.03$) compared with low quality lessons. For implementation fidelity, there were no significant differences in externalising or pro-social outcomes for pupils eligible for FSM. However, lessons rated as delivered with moderate fidelity were associated with *higher* scores on the internalising outcome for pupils eligible for FSM ($ES=0.307$, $p=0.03$).

The following table presents the MLM analysis for examination of whether differential gains of academic outcomes vary as a function of implementation.

Table 29: MLM examining the relationship between implementation variability and differential gains for pupils eligible for FSM on academic data.

		Mathematics $\beta_{0ij} = -0.049(0.138)$			English $\beta_{0ij} = 0.149(0.178)$		
		Co-efficient β	SE	p	Co-efficient β	SE	p
Class		0.009 (1.8%)	0.008	ns	0.045 (10.4%)	0.016	<.001
	Implementation Dosage (if high)	-0.261	0.139	0.03	0.022	0.178	ns
	Implementation Dosage (if moderate)	-0.131	0.105	ns	0.034	0.138	ns
	Implementation Quality (if high)	-0.017	0.170	ns	0.265	0.225	ns
	Implementation Quality (if moderate)	-0.002	0.112	ns	-0.029	0.139	ns
	Implementation Fidelity (if high)	0.324	0.227	ns	0.206	0.309	ns
	Implementation Fidelity (if moderate)	0.301	0.126	0.01	-0.123	0.172	ns
Pupil		0.504 (98.2%)	0.027	<.001	0.389 (89.6%)	0.021	<.001
	Gender (if female)	-0.102	0.053	ns	-0.049	0.049	ns
	FSM (if eligible)	0.003	0.201	ns	-0.003	0.183	ns
	Baseline score	0.675	0.029	<.001	0.707	0.026	<.001
Interactions							
	Dosage (if high)*FSM	0.440	0.238	0.04	0.116	0.222	ns
	Dosage (if moderate)*FSM	0.200	0.201	ns	0.080	0.190	ns
	Quality (if high)*FSM	0.128	0.458	ns	-0.551	0.407	ns
	Quality (if moderate)*FSM	-0.103	0.172	ns	0.005	0.158	ns
	Fidelity (if high)*FSM	-0.051	0.503	ns	0.656	0.451	ns
	Fidelity (if moderate)*FSM	-0.285	0.234	ns	-0.243	0.221	ns
-2*Loglikelihood		1579.701			1422.456		
		X ² (df = 8, n = 729) = 527.091, p<.001			X ² (df = 8, n = 729) = 626.065, p<.001		

The cross-level interactions for this analysis show that high dosage is associated with higher scores in mathematics for pupils eligible for FSM (ES=0.440, p=0.04). Conversely, on examination of the main effects, the analysis shows that high implementation dosage classrooms are associated with significantly lower scores in mathematics for pupils overall (ES=-0.261, p=0.03). No other effect of dosage was found. Additionally, no effect of implementation quality or fidelity was found to be associated with significant differences

in outcomes for children eligible for FSM. However, a main effect (for all children) was found for higher scores in mathematics associated with moderate fidelity of PATHS (ES=0.301, $p=0.01$), but this finding was not supported for children eligible for FSM.

6.8 Summary statements

The following summary will provide an overview of the quantitative results detailed in this chapter.

RQ1: At baseline, being eligible for FSM predicted higher scores in externalising symptoms ($ES=0.355$, $p<.001$) and internalising symptoms ($ES=0.253$, $p<.001$) and lower scores in pro-social behaviour ($ES=-0.184$, $p<.001$). Similarly, at baseline, being eligible for FSM predicted lower academic scores in Key Stage 1 mathematics ($ES=-0.357$, $p<.001$) and reading assessments ($ES=-0.390$, $p<.001$). Therefore, there were significant differences between children eligible for FSM in all 5 outcomes measured, compared with non-eligible peers.

RQ2: At post-test, no differential gains were found for pupils eligible for FSM, who received PATHS compared with those eligible for FSM who had not received PATHS (control), in pro-social behaviour or internalising symptoms. However, being eligible for FSM and being in the PATHS arm of the trial was associated with higher externalising problems score ($ES=0.165$, $p<.001$). The results showed no differential gains in either mathematics ($ES=-0.025$, *ns*) or reading ($ES=0.021$, *ns*) for pupils eligible for FSM who had received PATHS.

RQ3: Exploratory analysis of differential gains as a function of implementation variability found high dosage of PATHS (compared with low) and being eligible for FSM were significant predictors of higher scores in mathematics ($ES=0.440$, $p=0.04$). No other effect of dosage was found. Additionally, being eligible for FSM and receiving high quality ($ES=0.224$, $p=0.04$) or moderate quality ($ES=0.191$, $p=0.04$) lessons (compared to low quality) was associated with significantly higher scores in externalising problems. Finally, being eligible for FSM and receiving lessons of moderate programme fidelity (compared with low) was associated with significantly higher scores in internalising symptoms ($ES=0.307$, $p=0.03$).

Chapter 7:

Qualitative results

7.1 Introduction to chapter

The following chapter presents the findings of the qualitative strand of the study, built around the fourth overarching research question: What are teachers' perspectives in relation to implementation of the PATHS curriculum?

Section 7.2 outlines the key themes and subthemes used in order to analyse the data. This is in relation to the qualitative analytical strategy outlined in section 5.8.3 of the Methodology chapter. Section 7.3-7.6 presents the results in relation to the four key themes identified as part of the thematic analysis. Section 7.7 provides an overview of the findings for this section, including summary statements. The implications of the findings presented in this section will be discussed in the following chapter.

7.2 Introduction to research question 4

The final research question aims to understand teachers' perspectives and experiences of implementation of PATHS. The aim of this research question is to explore data generated from teacher interviews that will serve an explanatory function in relation to the quantitative data. The qualitative strand of the mixed methods approach taken in the current study provides a wider perspective and deeper understanding of the overall implementation of PATHS, including the broader view of the benefits and challenges of undertaking PATHS (see section 5.2.1 for further information regarding the mixed methods approach taken). The qualitative analysis examines the reality of implementing PATHS, through the perspectives and experiences of the teachers delivering the programme. This allows understanding of implementation in more in depth terms than the categorisation used in RQ3. This greater understanding of the practicalities of implementation is significant in advancing knowledge of what is feasible, alongside what works with regards school-based intervention implementation (see section 5.2.1 for a more in depth discussion). This also allows inferences to be made regarding the findings of RQ3, which utilises exploratory analysis to examine the relationship between variability of implementation of PATHS (via classroom observation data) and mental health/academic outcomes.

In order to look closely at the overall implementation of PATHS, the following main themes were identified as key aspects. These themes were derived from questions which arose from the quantitative analysis regarding the full picture of integration and delivery of the PATHS curriculum in schools. The literature base around implementation is limited, however studies which include an analysis of implementation often report the practicalities, rather than some of the reasons behind this variability. The present study aims to progress this research around implementation variability by examining this aspect, while also allowing further interpretation of the quantitative findings. Teachers' perspectives of benefits and challenges of PATHS will allow further insight into the preceding quantitative findings. As outlined in section 5.8.3, thematic analysis was used to analyse the qualitative data. Themes were generated in line with Braun and Clarke's (2006) six steps for thematic analysis (table 16 included in section 5.8.3 outlines the steps taken in current study in more detail). The main themes are presented below in figure 11.

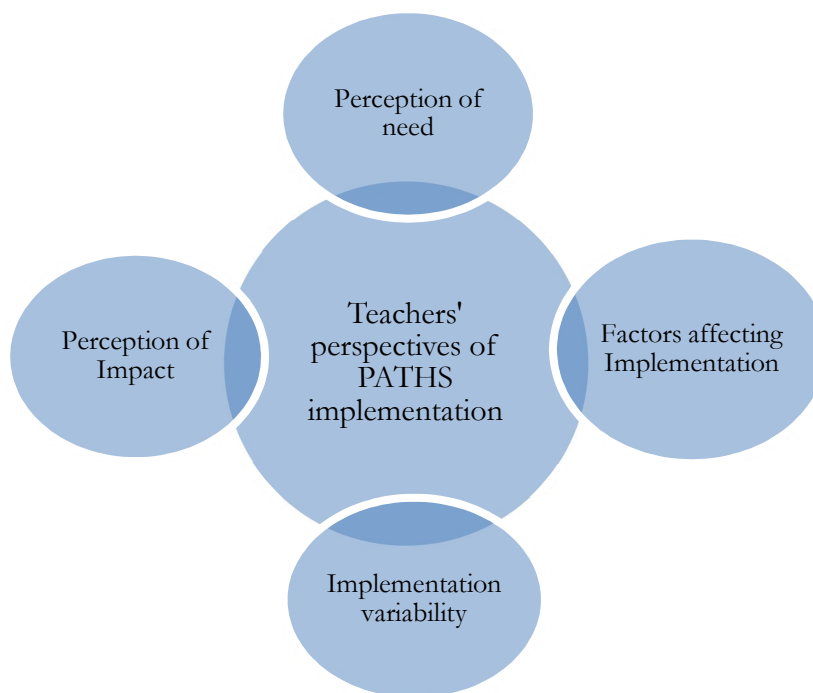


Figure 11: Qualitative analysis - main themes

A full thematic map (including sub-themes: figure 12 below) was also generated in relation to step 5 of the 6 steps outlined by Braun and Clarke (2006), allowing for themes to be summarised clearly, as well as defined and refined. The arrows from the main theme to the sub-themes are double ended, to reflect the bidirectional association between

perspectives and each sub-theme. Teachers' perspectives and attitudes towards PATHS were considered with regards the early stages of implementation, and also explored with regards how they may have changed with their experiences of delivering PATHS. Each of these themes is examined in the following sections, detailing teachers' perspectives and experiences of implementing the PATHS programme. An overview of the participant teachers is presented in section 5.5.3 of the methodology chapter. For the sake of clarity, interview extracts presented in this chapter are shown using italics.

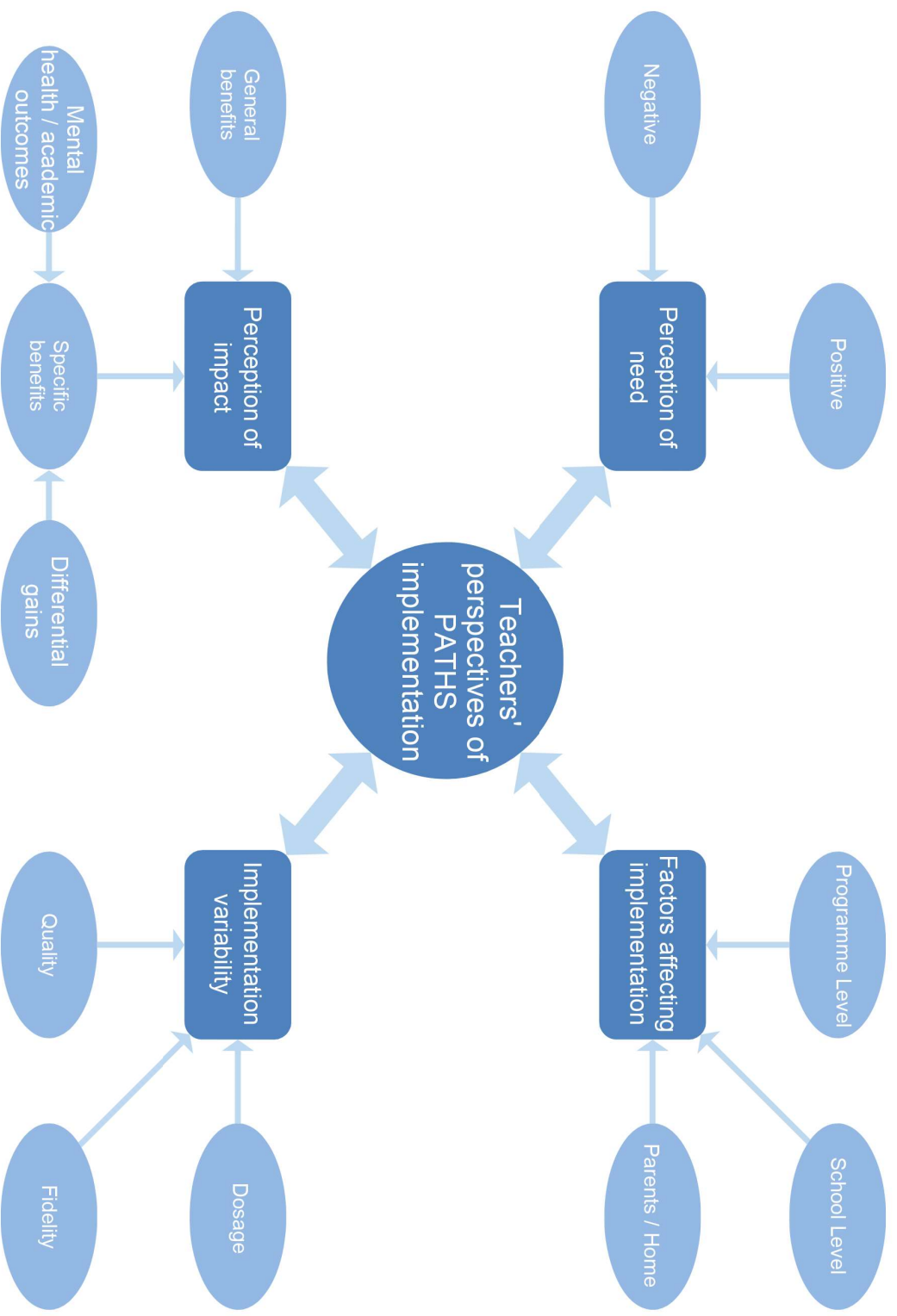


Figure 12: Full thematic map

7.3 Perception of need

The following section will present the findings from the qualitative analysis in relation to the first theme, teachers' perception of need of the PATHS programme. It is essential to gain an understanding into the various reasons why teachers may think PATHS is or is not useful, as this can have consequences for implementation. For example, teachers who do not value the importance of delivering PATHS may not put the required effort into teaching it with fidelity and quality, and dosage may also suffer as it is seen as a lower priority when timetabling the class lessons/activities (Collie, Shapka, Perry, & Martin, 2015). With regards adding explanatory data to RQ3 findings, the qualitative data aims to provide insight into the variation in implementation seen quantitatively. For purposes of rigour, analysis included exploration of both positive and negative perceptions of the need for PATHS, hence this section has been divided accordingly below. It is also noteworthy that there was some ambivalence in the perception of need, in that some teachers felt there was a need for some of their pupils, but not all of them.

7.3.1 Positive perceptions

The initial theme examined why schools had initially decided to take on the PATHS programme. This may have encouraged effective implementation, if the teacher considered the programme to be worthwhile and able to meet specific school needs (Baker, Kupersmidt, Voegler-lee, Arnold, & Willoughby, 2010).

Teachers reported a wide range of reasons why their school had adopted PATHS. Some of the teachers indicated that, based on the social and economic demographics of their school, they hoped PATHS would be able to fill a gap in developing social and emotional skills that children might not have the chance to develop at home:

"It's an area...of socio and economic sort of deprivation. For some children...not have the opportunities at home that many areas might provide." (Teacher yj0653, Year 6, School 9)

"It's families basically. Our school...some of [the pupils] will come in, probably gone through loads before they even get to us. So it's getting that nurturing started really." (Teacher ds4876, Year 6, School 25)

"...think it's very important that it's...taught and explained and that children are given this opportunity to discuss how they feel because...a lot of them won't have that chance at home." (Teacher nr3122, Year 3, School 36)

This links to research questions 2 & 3 examining the utility of a universal SEL programme on children from socio-economically disadvantaged backgrounds. As has been discussed previously, in relation to risk-resilience research, one notion relating to SEL interventions is that it may be of particular benefit for children who are at-risk of poorer outcomes (Hawkins et al., 1999). This was supported by the views of some teachers, who also theorised that the curriculum may be beneficial for the particular needs of their children from socio-economically disadvantaged backgrounds.

Similarly, some teachers felt PATHS was introduced to meet a particular need within the school. For example, one teacher considered the social and emotional skills of her children to need improvement, and hoped PATHS would be beneficial in this regard:

“Currently the class that I am working with – their social and emotional skills are a bit poor. So it would be good for them” (Teacher bj7479, Year 4, School 1).

While another felt that her students would benefit from developing skills in being able to express their feelings:

“I know the school is implementing the PATHS programme because children attending the school find it very difficult to...either show or explain how they feel to others.” (Teacher nr3122, Year 3, School 36)

Many of the skills that teachers reported they hoped to develop through delivery of the PATHS curriculum are key to building resilience. As discussed in Chapter 3, the development of individual protective factors is a core aim of the PATHS curriculum (Casel, 2007). Teachers recognised the role of PATHS in developing these fundamental skills. For example, one teacher valued the development of problem-solving skills:

“...structures in place that give children strategies to deal with problems that they’ve come across, it’s never been a school that’s been sanction led, it’s always been problem-solving led.” (Teacher eb7079, Year 3, School 10).

Furthermore, PATHS was seen by some as a way of developing self-regulation and self-management strategies, and practical strategies for coping with emotions, particularly for children who had struggled with this previously:

“...[the pupils are] very good at saying this is how we feel and this is what we should have done and I think that’s come from years of circle time and that sort of thing. But actually having, being given a strategy is a new thing to them.” (Teacher au0531, Year 4, School 43).

“We’re having a few instances with some of the children, their home life has caused quite a bit of upheaval and it just so happened that the lessons that we were doing at that time were about anger and controlling anger.” (Teacher my7758, Year 3, School 13).

This was also connected to the idea that PATHS would help with some behavioural challenges faced by schools, and support general behaviour management strategies:

“Certainly for my own class because a lot of my kids have behavioural issues...a lot of them just think they can just shout out of turn and just, it’s not like malicious or anything like that, it’s not the nasty kids, it’s just they find it difficult to keep themselves contained.” (Teacher ia7071, Year 4, School 25).

“I think with the difficult area we’ve got in our school it’s probably something that will help them [the pupils]. Especially with the behaviour problems sometimes that we have.” (Teacher ds4876, Year 6, School 25)

As well as the focus on development of individual key skills, teachers reflected on the overall behaviour problems within a school. The prevalence of behaviour problems have also been seen to be related to teacher perceptions of overall classroom climate (O’Brennan, Bradshaw, & Furlong, 2014). Developing a positive school climate and increased pupil attachment to school is also a key aim of the PATHS programme, through both improvement in individual pupil behaviour and creating effective learning environments (see section 3.3.2).

7.3.2 Negative perceptions

Conversely, negative perceptions of PATHS were also clear from the interview data. This may have had an impact on the delivery and implementation of the programme, through attitude and “buy-in” from the teachers. Some teachers did not seem to know the reason the programme had been adopted by the school, and the decision had been made by senior management or someone else in the school, with little or no consultation with teaching staff:

“I think that [PATHS] came from the headteacher and the deputy head. Those two together and then we found out...in September when we came back then that this is what we were going to be focusing on.” (Teacher je9608, Year 3, School 18)

Even if they did know the reason, the decision was still regarded as having been made for them. Some teachers reported that a member of the senior management team or other member of the school had decided to take on the programme. Some teachers used phrases which indicated they had not been part of the decision making process:

“I think because we’ve had quite a few behavioural issues in the past and they wanted a unified approach” (Teacher iu1492, Year 4, School 39)

“...they needed to focus on the behaviour on the upper key stage two so they thought erm PATHS might introduce a new a new way of things here for the children.” (Teacher rd6614, Year 4, School 14).

The use of the word “they” rather than “we” indicated that some teachers felt disconnected from the decision making process. It may also imply that the teachers interviewed did not share the beliefs of those who had made the decision to adopt PATHS. This could have consequences for teacher buy-in and attitudes towards the programme, and subsequent impact on implementation (Baker et al., 2010).

Likewise, some teachers did not feel like the school needed a programme like PATHS and seemed unclear on the potential need or benefits for their particular children:

“...anyone that comes to this school...doesn’t see it as a school that’s got behaviour management difficulties...so I’m not quite sure where we fit into the research programme.” (zp5215, Year 4, School 6).

This may be the result of a lack of understanding of the skills developed through SEL programmes and the aims of PATHS, as some staff seemed to consider PATHS as a programme specifically focused on behaviour management, rather than fostering SEL skills and developing protective factors.

In summary, teachers in several schools, particularly those in socio-economically disadvantaged areas, perceived a need for PATHS as often pupils had not been encouraged to develop and use social and emotional skills outside of school. However, it was also clear from the data that this was not the case in all schools and there was not always clear agreement between teachers and senior leadership team members about the need for PATHS. These findings may be associated with overall implementation variability seen in the RQ3 analysis, since implementer attitudes towards a programme can affect subsequent implementation (Baker et al., 2010).

7.4 Implementation variability

The following section will present the findings from the analysis in relation to teachers’ perspectives of implementation variability. As the observation data utilised in RQ3 showed, there was variability in the dimensions of implementation that are the focus of the current study (see section 5.6.4). Therefore, gaining an insight into teachers’

perspectives of these implementation dimensions is a significant theme in understanding some of the reasons behind this variability. For ease of interpretation, this section has been divided into the three main aspects of implementation that are the focus of this thesis: dosage, quality/participant responsiveness and fidelity (these dimensions are discussed in more detail in section 4.3).

7.4.1 Dosage

As also highlighted in RQ3, the number of PATHS lessons taught varied from teacher to teacher in the project. As discussed in section 4.3, the amount of the original programme that is delivered can be associated with outcomes. The number of PATHS lessons taught was discussed during the interviews, as well as reasons why not all of the lessons were delivered, and emerged as a key theme throughout the data.

Almost all of the teachers reported that fitting in the recommended number of PATHS lessons per week (2 x half hour lessons) was extremely difficult:

“I do try and do it twice a week, but at the minute it is not happening twice a week, it is more likely to be once a week.” (Teacher bj7479, Year 4, School 1)

“We try to do twice a week, but we’re such a busy school, we have so much going on, it is normally once a week for about half an hour.” (Teacher mx2761, Year 3, School 2)

“...just the timetable that’s all because I hold my hand up and there has been weeks where I’m driving home on a Friday thinking I’ve not done PATHS this week (laughs).” (Teacher rd6614, Year 4, School 14)

One lesson per week seemed to be manageable for many teachers, but this obviously has an impact on the number of lessons delivered throughout the year and also the frequency in which children were receiving PATHS lessons. There are various implications of this, such as lack of reinforcement of concepts, reduced familiarity of PATHS overall, with high dosage of preventative interventions being seen by some as a way to strengthen responses and build resilience against the harmful effects of risk (see section 4.3 for further detail). Additionally, many teachers reported a very demanding timetable in terms of curriculum outcomes that had to be covered, again impacting on their ability to undertake the full programme:

“Because this term in particular we’ve had so much else in the timetable that I have just not been able to fit it in. So we have like Monday morning we have life skills until 11. Wednesday afternoon we have one goal which is a football company come in doing six habits with them. Thursday afternoon we’ve got Manchester United come in. And then Friday afternoon we have our counsellor from our Place To Be service comes in and does some teamwork with them. So I’ve only got one afternoon, one full afternoon to teach sort of like topic and things like that. And I’ve just got no time to fit it in at the moment.” (Teacher zj6828, Year 6, School 38)

Similarly, other events occurring throughout the year were reported as impacting on the ability to deliver the recommended amount of lessons:

“If I’m honest this half term is virtually been one, maybe once, because of pantomime which has literally taken over everything.” (Teacher ds4876, Year 6, School 25)

Teachers also reported ways they attempted to increase the number of lessons undertaken, by adapting the recommended two lessons per week approach:

“And if we don’t get it [PATHS] once every week we’ll do it once a fortnight but...what I’ve done one week, we done like a whole week of PATHS so all the afternoons were dedicated to PATHS.” (Teacher ia7071, Year 4, School 25)

This method may also have an impact on learning since combining lessons may mean too many concepts are taught in one go. Some children may struggle to get everything from this intensive delivery of the lessons, or have enough opportunity to practice new skills before moving on to a new concept. Similarly, some teachers varied how often they taught PATHS in order to fit everything in to their timetables:

“Realistically sometimes it’s not that I can do it once a week, sometimes I’ll do two sessions and other week I won’t do any” (Teacher uh6793, Year 6, School 7)

Again, this may have detrimental consequences to learning as the children are not developing their skills on a regular and consistent basis. Some teachers also noted that, although lessons were delivered consistently at the beginning of the school year, this reduced as time progressed due to other time commitments:

“For the first term in was twice a week and this term I’ve been lucky if I’ve been able to get it in at all if I’m being honest.” (Teacher au0531, Year 4, School 43)

“...next door was really promoting it and I know, 5, 4 and 3 were doing it on a regular basis, that did ease off towards the end of the year, I must admit.” (Teacher ti9440, Year 6, School 36)

Furthermore, teachers reported many competing priorities, with SEL not being seen as high up on the list as academic subjects such as literacy and mathematics. Some teachers reported not being able to deliver many PATHS lessons or any at all, when competing with academic priorities:

“There isn't any room for it [PATHS], this class is quite a poor ability class and they need as much teaching as possible to get them up to the required standard.” (Teacher ti9440, Year 6, School 36)

“Yeaah it's just the timetable because we've got swimming we can't fit it in through the times and we tried to do a 20 minute PATHS lessons and 15 minutes guided reading session and it wasn't working, guiding reading took precedence at the school so taken that slot.” (Teacher iu1492, Year 4, School 39)

This gives the overall impression that although many teachers could see the need for PATHS and social emotional learning, there was a large emphasis on academic teaching which was prioritised before PATHS. Similarly, a very full timetable meant most teachers found it difficult to deliver the recommended amount and frequency of PATHS lessons. This is reflective of the current UK education system in there is more pressure to cover academic content (Humphrey, Lendrum, & Wigelsworth, 2010). Furthermore, it is possible that the reduced frequency of lessons as time went on suggests that teachers did not feel that PATHS was achieving the outcomes they had expected. This variation in dosage may have had an effect on outcomes, which will be explored further in the discussion chapter with reference to Research Questions 2 and 3.

7.4.2 Quality

An understanding of implementation quality is important since it can vary significantly and have an effect on the delivery and reception of a programme, with subsequent consequences for desired programme outcomes (see section 4.3 for more in depth discussion). Exploring implementation quality through interviews with teachers is difficult, as they are unlikely to self-report poor lesson quality or, perhaps, even be aware that their implementation quality is low. However, during the interviews there were some key points discussed by the participants which indicated some reasons why quality may have varied in the PATHS lessons delivered through the project.

Some of the comments indicated that the prescriptive nature of the lessons was seen as almost a hindrance to teaching, interfering with preferred and natural teaching strategies, which may have impacted on delivery quality:

“I find it [PATHS] a bit stiff to teach sometimes and because it’s so prescribed and you don’t want to say the wrong thing then you find that you’re reading it and actually it’s not a natural way of teaching because you don’t read a book like that when you’re teaching them, so I find that difficult.” (Teacher xp6913, Year 3, School 19).

“You also feel slightly, I must stick to the script and I never teach with a script” (Teacher vx6340, Year 4, School 30).

“On the negative...I’m quite a visual teacher, I like to have things at the front and it [PATHS] doesn’t allow me that opportunity. I have to try to think how can I make it less black and white, what can I do?” (Teacher uh6793, Year 6, School 7)

However, some teachers found that the manualised format meant that preparation was minimal. This has positives and negatives implications. The positives being that there was less to prepare, but the negatives were that sometimes teachers did not put full thought or planning into the lessons, and this may be detrimental to quality:

“...for me I thought I can just go to the folder and pick it up and I’ve got a lesson that, it sounds really bad, I don’t need to think too much about it. It’s just there for me.” (Teacher ds4876, Year 6, School 25)

“Sometimes there’s so much to read...I’m not the quickest reader in the world so I just think oh I’ll read that bit and I just scan through it and think I’ll oh I’m not reading the rest of that. So if it’s at the end of the paragraph I’ve generally not read it.” (Teacher qp2617, Year 3, School 5)

“...we sat and said what do we like and what we don’t like and they [the pupils] said the stories aren’t about us and I tried to then adapt the stories but then that was taking a long amount of time to adapt the stories to them. So I had to go back to just reading the stories as they were and changing them on the hoof while I was doing.” (Teacher iu1492, Year 4, School 39)

This indicates that the lessons were not always as accessible or engaging for the pupils as they could have been. Moreover, the lack of planning reflects the low priority given to PATHS, linking to previous comments regarding the focus on academic lessons. Additionally, one teacher reported that the lack of preparation needed meant that modifications were not made to ensure the programme was relevant to the children:

“Yes, like some of the words I probably shouldn’t have did this morning if I thought about it more, like assignment and stuff like that....our kids wouldn’t tend, and study skills, wouldn’t really say study skills to them it’s more like revision.” (Teacher ds4876, Year 6, School 25)

This again may have had an impact on delivery of the lessons and pupil responsiveness, with a potential subsequent effect on outcomes. This also links to the factor analysis conducted on the observation data as part of the quantitative analysis (see section 5.6.4) which found a relationship between quality and pupil responsiveness.

Furthermore, as PATHS was sometimes seen as less important than some of the core subjects, it was often left as cover material during the class teacher's planning, preparation and assessment (PPA) time:

"No. I've had other people deliver them in my absence so I personally haven't done particular ones but I've always tried to leave them a good one I felt is more manageable" (Teacher uh6793, Year 6, School 7).

"I'm out of class on Friday for management time so I will probably put one of my PATHS sessions into the afternoon, on the Friday afternoon when my TA is in. So it's good that my TA has got something completely planned for them to teach as well" (Teacher zj6828, Year 6, School 38).

This again may be related to lesson quality, since the cover teacher or teaching assistant may not know the class as well as the teacher and, therefore may not be able to reinforce from prior learning or make the most of the content being discussed. This could also have bearing on continuity and reviewing of the lessons – a key aspect of the spiral curriculum design – since it may not be the same person teaching the lessons consistently.

7.4.3. Fidelity and adaptations

Section 4.3 of the literature review examined the concept of programme fidelity, with regards the reasons why a programme might be adapted and the consequences this may have on desired outcomes. There is an ongoing debate within the literature base regarding programme fidelity. Some suggest that it is key to adhere to a programme method and content as closely as possible, with little or no adaptation, in order to achieve desired outcomes (Elliott & Mihalic, 2004). Others argue that moderate adaptation is not only necessary in order to meet particular needs, but an inevitability of real-life implementation (Lendrum & Humphrey, 2012). Therefore it is important to understand why teachers may or may not adapt lessons. Reasons relating to fidelity and adaptations were discussed by the teachers through the interviews.

Teachers reported that they tried to stick to the lesson plans as much as possible, indicating that, for the most part, they appreciated the need for programme fidelity:

"I do sometimes feel like it's a bit of a script and you're kind of...obviously you put your own slant on things without trying to deviate from it too much" (Teacher my7758, Year 3, School 13)

"I've probably skipped one or two but only when I've been wary to miss so many, I know we're not meant to do this but when I've tried to squash two into one, to try and get them done." (Teacher au0531, Year 4, School 43)

Despite indicating that they knew that the programme should be followed as outlined by developers, small adaptations, for example combining and skipping lessons, still occurred, perhaps highlighting the inevitability of adaptation in real-world implementation.

Adaptations were made for a range of reasons, such as time pressures. This may also be linked to the priority of PATHS within the overall curriculum:

“There might have been one or two that we might have skipped. No I won’t say skipped past but we might have skimmed, do you understand? Like might not have sat down and dedicated a full hour to it but we done maybe the main parts.” (Teacher ia7071, Year 4, School 25)

Furthermore, the manualised nature of the programme also meant teachers were inclined to make adaptations to fit their own teaching style. Again, this may be linked to the autonomy in regards lesson planning that teachers are used to in the UK:

“I think the only my only criticism would be that sometimes they’re [the lessons] just a bit too prescriptive so I do tend to tell the story more in my own words erm but I’m sure that’s acceptable.” (Teacher va6587, Year 6, School 24)

Most of the adaptations teachers reported involved making minor changes in order to ensure relevancy for their children:

“And I do try to follow it but I’ll also throw in things as you see today that make it more personal for my children.” (Teacher vx6340, Year 4, School 30)

“So the stories, I’d say about 80 per cent of them we tweak to make them relevant.” (Teacher iu1492, Year 4, School 39)

However, moderate changes to method were also noted, with one teacher reporting that she omitted some of the written aspects of the lessons in favour of further discussion with the pupils:

“The one thing I tend not to do is only the written work it tends to be all oral getting children involved in discussion role play things like that rather than anything written down.” (Teacher ka6448, Year 4, School 41)

By adapting the activities of the lessons, the teacher may unwittingly be undermining skill development and/or the opportunity for children who learn through writing to engage with the programme. This highlights a significant issue regarding the fidelity/adaptation debate, regarding the balance between adapting in order to meet the needs of the learners

and ensuring that the programme is still effective in improving outcomes (Dusenbury et al., 2005).

Although adaptations may be helpful in improving relevance for pupils, this is only the case if it does not interfere with the mechanisms of change. In addition, although positive adaptations can be helpful (see literature review section 4.3) too many may change the programme to such an extent that it can no longer achieve the intended outcomes (Hansen et al., 2013).

In summary, it is clear from the data that there were a variety of reasons for variability in dosage, fidelity and quality of PATHS lessons delivered as part of the project. Some of the findings in this section allow for increased understanding of implementation variability in the current study which may have an effect on desired outcomes.

7.5 Factors affecting implementation

As discussed in the literature review, there are a number of factors which can impact on school-based implementation. It is important to identify these in order to increase understanding of implementation, which may be a moderator of outcomes. The following section will present the findings from the qualitative analysis in relation to teachers' reports of factors which have affected overall implementation of PATHS. For ease of interpretation, this section has been divided into the three sub-themes which emerged during the analysis: programme level, school level and parents/home.

7.5.1 Programme level

Whilst there is a lot of connection between the themes explored in this chapter, it is appropriate to consider teachers' varied attitudes towards the PATHS curriculum in general, since implementers' attitudes towards a programme have been seen to influence implementation variability (Durlak & DuPre, 2008).

Some teachers were positive about the programme, detailing more favourable aspects:

"I like the structure and I like teaching children...strategies...to support when they're feeling frustrated"
(Teacher eb7079, Year 3, School 10)

"I think the lessons sort of show clear progression from one to another and they obviously refer back to...previous lessons that we've had." (Teacher nr3122, Year 3, School 36)

However opinions on other aspects varied. For example, whilst some teachers liked the readymade lessons:

“On the positives it [PATHS] is all done for you. The questions you’re asking within the actual lessons it does give you an array of answers what to expect or what to prompt. So it is all done for you.” (Teacher uh6793, Year 6, School 7)

Some teachers did not like the prescriptive nature of them:

“You know it’s all scripted and things for you but I don’t know how much I like having something completely scripted for me. I feel like I have to stick to it and then I get confused with what I’m saying and things like that.” (Teacher zj6828, Year 6, School 38)

Some teachers also felt the preparation needed in advance of lessons was excessive. This seemed to be especially true if the teachers prioritised PATHS lessons below academic subjects, such as literacy and numeracy:

“Sometimes I just think I’ve not got enough time to sit and read that when I’ve got 5 numeracy and literacy lessons to prepare for” (Teacher qp2617, Year 3, School 5).

“When you’ve got an hour of literacy and numeracy a day and it takes it longer to read through the plans and get the resources ready for the PATHS which is only 20 minutes” (Teacher iu1492, Year 4, School 39)

Some teachers enjoyed the opportunity PATHS gave them to get to know the children in their class more, promoting positive teacher-pupil relationships. Additionally, some commented that PATHS lessons provided a more relaxing session than some of the other more academic lessons they undertook.

“It’s just a nice session to have and bonding time with your class because it can be quite fast paced in normal lesson time, trying to get a lot in, so it’s a nice time to slow down and talk about how you’ve been feeling and stuff like that” (Teacher mx2761, Year 3, School 2)

“It’s one of those nice lessons they really look forward to doing something, not relax a bit but it’s not as heavy loading as a literacy numeracy session.” (Teacher ds4876, Year 6, School 25)

With regards to universal intervention, some teachers did not see the benefits of delivering the programme to the whole class, particularly if there were only a minority of children in their class they considered to need a programme like PATHS:

“I think lots of things go over that aren’t necessarily a problem for my children” (Teacher vx6340, year 4, School 30).

“And the other kids don’t need the strategies in the first place so you’re teaching to 30 children when six need it and they’re the ones that can’t access it.” (iu1492, Year 4, School 39)

Additionally, teachers commented on the cultural transferability of PATHS, with some of the teachers reporting that the programme was not always relevant to British teaching or children:

“Now as it’s coming from America I feel some of it is maybe aimed more so at American kids...or they might be more relevant to American kids...I can remember thinking to myself you can that it wasn’t designed with maybe British kids in mind.” (Teacher ia7071, Year 4, School 25)

“It’s very Americanised and it’s a very different way of teaching than...we would normally be expected to teach in our school. A lot of the children listening and discussions rather than...doing...so that...I think lots of things go over that aren’t necessarily a problem for my children” (Teacher vx6340, Year 4, School 30)

With regards to children at risk, some teachers reported issues with accessibility of resources for children who were from disadvantaged backgrounds:

“Oh the other thing is quite a lot of the stories aren’t relevant to our particular children because of their background. There’s stories about going to shops and choosing new clothes and that doesn’t happen very often for the kids in our school. Going on holidays and that doesn’t really happen....Ok quite a lot of the issues in the stories is to do with money and they don’t have disposable incomes in the same way the characters in the story do. The other is to do with travelling. Quite a lot of them have never left this small area of Manchester. At the beginning of the year we asked them where their favourite place in the world was and 10 out of 30 said ASDA because that was the place they go most often which isn’t there own house. They don’t have gardens, the stories talk about going out and playing and they’re not allowed to they stay in in the evenings. So it’s just a matter of their home life, that balance.” (Teacher iu1492, Year 4, School 39)

This is significant in consideration of the fidelity/adaptation debate, with regards cultural adaptations for relevance and inclusion for diverse school populations, while maintaining programme integrity (Castro et al., 2004). This is particularly pertinent to the current study, examining potential differential gains for children from socio-economically disadvantaged backgrounds.

7.5.2 School level

The wider context in which a programme is delivered has also been seen to affect overall implementation (Durlak & DuPre, 2008). Additionally, as explored in section 3.5.2, the school context is considered key in supporting the development of fundamental skills, alongside the lessons. With regards school level factors, PATHS was sometimes seen as

less of a priority than other curriculum areas, and this was at times related to the particular needs of the children or school, and other things that were happening in the wider school community, which took priority:

“I seemed to be doing quite well with it, but then over this last half term...there has been quite a lot going on. We have had OFSTED and things like that, so it has unfortunately taken, not a back seat but it is not been as forward as literacy and maths and things like that, but we are starting to pick it up.” (Teacher bj7479, year 4, School 1)

Some teachers even reported that, while they personally felt social and emotional learning was important, the other learning and activities of the school did not allow for it to be given high priority:

“Yeah, I guess, it wouldn’t be as high at the minute just because it’s so busy, but it is...I do feel it is an important thing.” (Teacher mx2761, Year 3, School 2)

“The hardest part is the mornings of our school were timetabled in rigidly with maths, English and reading. Like every morning is completely out. So it’s just the constraints of the school timetable in some cases that doesn’t make it easy to fit it in.” (Teacher uh6793, Year 6, School 7)

Furthermore, teachers echoed the recurring theme that academic learning, such as maths and English were regarded as higher priority, and this seemed to emanate from the pressure of school targets and inspections:

“Well obviously it’s massively important but in terms of literacy and numeracy then it is below that because you know we have to get the results that we have to get and so I can’t, like I can’t sort of shorten my literacy and numeracy sessions.” (Teacher zj6828, Year 6, School 38)

“And in the pecking order, you know you want to put that equally at the top but there are other targets that are going on. You can’t say to Ofsted and your grades online but I got a green flag for my PATHS. So that’s the issue that you are under as a year six. You know you are judged and you, it wouldn’t, it’s not going to save you to say that they were all happy and they got along together well.” (Teacher uh6793, Year 6, School 7)

The particular needs of the specific class also impacted on implementation. For example, if some areas of high priority subjects (such as maths and literacy) were deemed to be weaker in a particular class, then these were given emphasis on the timetable, particularly in Year 6 in preparation for SATs:

“And this class as well are particularly low achieving class so they have to get as much sort of literacy and numeracy things in.” (Teacher zj6828, Year 6, School 38)

“And we [the class] are quite poor on maths at the moment, so maths is getting a very, very high profile and other things are coming off the timetable.” (Teacher ti9440, Year 6, School 36)

As discussed in Chapter 3 a further aspect of the PATHS curriculum is generalisation, in order to reinforce key strategies and concepts (Domitrovich, Gest, Jones, Gill, & Sanford Derousie, 2010). A theme that emerged was that generalisation throughout the school day and through the wider school was inconsistent, with some teachers highlighting that PATHS skills and concepts were not being used or referred to whole school and were kept solely within the classroom:

“I think it [PATHS] should be something implemented more with the dinner time staff and at play time because although we use it I think the children need to use it and see it used in those situations a lot more rather than in theory.” (Teacher nr3122, Year 3, School 36)

“We asked if we could have the PATHS traffic light out in the playground so they could use and have a time basically when you could go and talk to someone about your issues. And it wasn’t taken forward but I don’t know if that was logistics or a support for PATHS which was the issue.” (Teacher iu1492, Year 4, School 39)

“I think it would really benefit from being a whole school thing. And like I said maybe the teaching assistants being trained to use it in the playground and lunchtime organisers reinforcing it. That is one of the problems without the teachers being out on duty there is no one there to sort of emphasis it.” (Teacher yj0653, Year 6, School 9)

This meant at key times, such as break and lunch, when the children may need to use the skills from PATHS these were not being encouraged or reinforced.

PATHS was also often in competition with other initiatives happening in the school, which sometimes impacted on the whole school use of PATHS:

“It’s [PATHS] in competition with all the other things that are also high profile in the school... There is an awful lot going on.... So RRS A we have that comes with its own set of language, how we’re supposed to address the children and talk about their rights and so lots of assemblies are about rights respects in schools. Whereas we don’t have assemblies related to PATHS. The teaching assistants and lunchtime organisers are trying to use Rights language as well as PATHS language at the same time and posters and information. We’ve got lots of displays about the Rights but we’ve also got PATHS displayed at the same time.” (Teacher au0531, Year 4, School 43)

“Because a lot of the other things we buy into school are done by external practitioners we can’t let those go because you’ve got someone knocking on your door saying ‘I’m here’. Whereas with PATHS it’s that thing where it’s on my desk, can do it but we might not get time.” (Teacher au0531, Year 4, School 43)

Teachers commented on the perceived support from school senior management in the initial stages of adopting the programme, and this was a key theme that continued through discussions regarding overall implementation of PATHS.

“I think that it could be higher than it is. We are all doing it but I personally believe that if your deputy head and head was involved with it they could implement it and make sure the whole school knew about it...the profile could be higher but I really think the senior management need to be, take it on board themselves not just the teachers” (Teacher uh6793, Year 6, School 7)

This was also linked to criticisms by some teachers regarding communication around the adoption and implementation of PATHS by school senior leaders:

“I’m not going to be too negative. It’s just a communication issue which...has been identified by other external people sometimes within the school that that’s an issue...it might have been nice if we’d have been consulted” (Teacher zp5215, Year 4, School 6)

This is significant as senior leadership support has been linked to quality of implementation (Kam, Greenberg, & Walls, 2003).

7.5.3 Parents/home factors

Chapter 2 highlighted the importance of parental input and home environment in developing skills that build resilience. As well as implementation in the classroom affecting outcomes, reinforcement of skills is crucial in the wider context. One criticism of some SEL programmes, including PATHS, is the lack of a comprehensive approach to developing resilience and reducing risk, focusing on both individual and contextual factors (Domitrovich et al., 2010). This was reflected in teachers’ comments regarding the influence of contextual factors on social and emotional learning. Some teachers expressed concern that the lack of opportunities provided, out with the classroom environment, to develop these skills made school-based social and emotional learning interventions, such as PATHS, even more important.

“Well literacy and numeracy. They [the pupils] just don’t have the basics...so you teaching them basics that in other areas they would have learned at home and then we have to catch up” (Teacher qp2617, Year 3, School 5)

As well as the feeling that some children were coming to school deficient in key skills due to a lack of support to develop these at home, teachers reported difficulties in engaging parents in the continuation of learning at home:

“Parents, varying success I’ll be honest. Some parents, it’s not just for PATHS it’s across the board like. Homework, reading at home, the whole lot...it’s the same parents that will participate and it’s the same parents that won’t. It’s nothing to do with PATHS it’s just general it’s the way it is... we’ve been trying our hardest to bridge that gap you know but parents just don’t seem to be interested I’ll be honest.” (Teacher ia7071, Year 4, School 25)

“Our parents are brilliant at supporting things in parents’ evening and they’re not always up to supporting things that are sent home.” (Teacher iu1492, Year 4, School 39)

“Hit and miss [parental engagement with PATHS] if I’m being honest we do have an issue at the school of parental involvement” (Teacher fk6332, Year 4, School 26)

As discussed in Chapter 3, one of the limitations of the PATHS curriculum is the lack of parent materials. This was also reflected by the teachers in their comments regarding follow up home materials:

“We send home the letter at the beginning of the year and I don’t think anything else has come up really to send home.” (Teacher ds4876, Year 6, School 25)

Similarly, some teachers reported that, even with the limited home resources available in PATHS, there was limited success in encouraging follow up learning at home:

“This is a school homework policy where children have one piece of written homework and a learning log a week and learning and times tables to do. And so getting them to do that is a struggle and while they enjoy PATHS, getting them to do extra, often you hand it out and it doesn’t come back in.” (Teacher au0531, Year 4, School 43)

“Obviously there is some children, probably the children who need it most are the ones who leave the sheet in the bag and it never goes home.” (Teacher yj0653, Year 6, School 9)

The issue of unsuccessful follow up of PATHS learning at home may also be related to the lack of parental engagement also reported by teachers. However, while teachers expressed a general concern at the lack of engagement and support by some parents, other teachers highlighted reasons that parents may not always be in a position to follow up on learning from school:

“Part of that is a language barrier. There’s a lot of parents who don’t have English as first language and all the resources are in English so when you send material home, if the kid is also struggling with the literacy they actually can’t access it.” (Teacher iu1492, Year 4, School 39)

It is a significant issue to consider accessibility of programmes such as PATHS for, not only pupils within the classroom, but parents, in order to identify the role of generalisation across contexts, as this may also be related to the effect on outcomes (Castro et al., 2004).

Furthermore, the limited opportunities outside of the classroom for pupils to develop learned skills may mean teachers do not see perceived benefits as quickly, which may also have the result of reduced implementation as teachers lose faith in the programme.

In summary, the findings show that there are many factors which can impact on implementation variability, which may also be consequential for desired outcomes. Teacher attitudes towards the programme can influence implementation. Furthermore, school level factors may influence the amount of importance and priority of PATHS. Additionally, implementation of PATHS includes the development of skills in the wider context, including generalisation. Similarly, lack of consistency and generalisation to develop PATHS skills at home may mean opportunities to reinforce and practice learning are missed, reducing the overall effectiveness on outcomes.

7.6 Perception of impact

The final section will present the findings in relation to teachers' perceptions of impact of the PATHS programme. Examining teachers' perceptions is important in further understanding aspects which may influence programme implementation. For example, Baker et al. (2010) found that teacher concerns about an intervention predicted less participation. If teachers believe in a programme, particularly that it is of benefit, they are more likely to engage in effective implementation. Therefore, this section aims to identify teachers' perspectives of the benefits of PATHS, which may have had an effect on implementation. Furthermore, it is useful to examine the perceived benefits in relation to the outcomes measured quantitatively in RQ2&3, to ascertain confluence and provide further insight into the quantitative findings. For ease of interpretation this section will be divided into headings utilising the sub-themes, as outlined in the full thematic map, exploring firstly, general benefits, and then specific benefits with regards mental health/academic outcomes and specific benefits in relation to children from socio-economically disadvantaged backgrounds.

7.6.1 General benefits

In general, teachers interviewed were positive about the PATHS programme overall, although there were a range of perceived benefits. Many teachers reported that they felt PATHS allowed them the opportunity to talk to the children in their class, and provided a more relaxed classroom experience than other timetabled learning:

“Again it’s talking about themselves, their own experiences and saying “this is similar to when this happened to me”. I think they like that it’s something different and less formal regular structure of the day.” (Teacher au0531, Year 4, School 43)

Some teachers reported that PATHS lessons had allowed them the opportunity to further understand their children, including aspects that they may not necessarily have been aware of previously:

“They come out with...quite in depth insights into things as well so I enjoy it from that point of view because I think you know they’re really getting something out of it and you almost see them on a different level from you know when you’re teaching a maths lesson or an English lesson.” (Teacher va6587, Year 6, School 24)

“We’ve got so much to do and it’s that you’ve got to do this, you’ve got to fit this in, you’ve got to self-assess and der der der der it’s just nice to just sit there and talk to them about how they’re feeling and if you notice some have got a blue... like one of the children the other week had a blue one and said she was lonely and you wouldn’t have expected her in a million years because she’s lovely and she’s got loads of friends but she just said I feel really lonely and it’s mainly on the playground” (Teacher qp2617, Year 3, School 5)

Additionally, the development of positive teacher-pupil relationships also emerged from the data:

“Yeah I would say even towards myself now I would say they’re probably more respectful, they’re more respectful of other teachers as well.” (Teacher ia7071, Year 4, School 25)

A recurring benefit that emerged from the data regarded the development and use of emotional vocabulary which allowed the children to express themselves:

“I was quite impressed with the words they came up with this morning explaining their feelings. So I’m thinking maybe the fact, the feelings thing and the fact that it’s okay to feel those things, I think some of ours is useful to have.” (Teacher xf7909, Year 6, School 17)

“Well it’s mainly the negative emotions that they like to talk about and then when they’re aware of them they’re like ‘oh...I’m not feeling...because...’ and they’re like that’s not really...so yeah, you have to talk about it then during the register, so it can come up a lot through the week.” (Teacher mx2761, Year 3, School 2)

“I definitely, and especially I’ve seen it more for this year group especially it suits them to be able to talk about that type of stuff because at home it’s not easy for them you know and it’s a way of getting things off their chest and maybe just a little bit of coming out.” (Teacher ia7071, Year 4, School 25)

This is in keeping with PATHS literature, which suggests benefits in emotional vocabulary development and expression (e.g. Greenberg, Kusche, Cook, & Quamma, 1995).

7.6.2 Specific benefits: Mental health/academic achievement outcomes

Many teachers commented that PATHS taught key skills in understanding emotions and providing skills in how to deal with them more effectively:

“It has made a difference, just making them aware of how they’re feeling and how to deal with it and giving them a structure which is good.” (Teacher mx2761, Year 3, School 2)

However, with regards to externalising problems, in contrast to the perceived benefits in increased emotional expression, teachers reflected that the self-control skills learned seemed to be less effective in ‘real life’ contexts when the children had to actively put the strategies into use:

“That’s the thing, they know about it, they understand it and they know how to use it, but it’s not something that they seem to be doing off their own back... I just think they’re quite young and it’s a lot to stop and think...it’s just not instinctive for them to behave that way ‘cause you deal with it there and then however you’re feeling, you don’t take a step back...they can reflect on it very well but in the moment they don’t seem to do” (Teacher xp6913, Year 3, School 19)

“It’s not really the first thing they think they mostly still think that they should push someone or hit someone before they think about stopping.” (Teacher nr3122, Year 3, School 36)

Some teachers commented that the children needed extra support in order to put the strategies they were learning into action:

“Sometimes if they are getting a bit...stressed then you might have to remind them but then they’re like ‘ok, I’m going to count to ten’ and I’m like ‘that’s good, you count to ten.” (Teacher mx2761, Year 3, School 2)

This links to the generalisation of PATHS through the day and earlier comments regarding PATHS being kept to the classroom – impact of the programme may be minimised by limited reference to the learned strategies in key situations.

There was also difficulty in identifying behavioural improvements in schools where behaviour was perceived to be of a good standard. This limits perceived impact due to a ceiling effect:

“I have not noticed any at all because we are quite a well behaved school anyway, so I wouldn’t say there was anything major happened.” (Teacher ti9440, Year 6, School 36)

With regards to internalising symptoms, teachers again noted benefits in regards emotional expression, particularly for children who may have kept these issues to themselves previously:

“There is a lot of children here with problems outside of school and they will have had issues especially with the feelings things. They had issues coming out as such and I felt it’s becoming, it’s been very good from that way.” (Teacher ia7071, Year 4, School 25)

“Yeah, some of the children that are having issues at home will actually come and say why now, they won’t just...you know, come in upset and say ‘I don’t want to talk about it.’ There are times when they will sort of say, this happened this morning or I’m sad because...I’m upset because.” (Teacher my7758, Year 3, School 13)

Only a small number of teachers commented on the relationship between PATHS and academic attainment. Overall the data highlighted a lack of direct benefit on academic achievement through undertaking PATHS:

“I have not noticed any changes in their academic work or anything like that at this point but it is something that they seem to enjoy and they like talking about it.” (Teacher bj7479, Year 4, School 1)

7.6.3 Specific benefits: differential gains

Teachers were asked whether they perceived any specific benefits for particular groups of children. While some teachers reported benefits for some groups of children at risk, such as children who spoke EAL:

“I think it has been really useful, especially for the EAL to...focus on expressing themselves”. (Teacher mx2761, Year 3, School 2)

None of the teachers reported specific benefits for children from socio-economically disadvantaged backgrounds. However, some teachers indicated that there were limited benefits for children who were perceived as needing it the most:

“The particular children you really want to get, I don’t know whether it’s the same in other schools, it’s not having the impact on that child that it’s having on the others” (Teacher uh6793, Year 6, School 7)

“We’ve got one child who I think...he just needs intensive intervention, I’m not overly sure how successful it is addressing his needs, but he’s got a lot of problems...has suffered...you know, possible abuse and...this isn’t going to answer his problems, you know...he needs more professional help than what I am able to give.” (Teacher eb7079, Year 3, School 10)

This is a significant theme to consider, when examining differential gains for children from socio-economically disadvantaged backgrounds. This is particularly pertinent, and allows further insight, to the findings of RQ2, which did not produce differential gains of PATHS for children eligible for FSM.

In summary, the perception of impact reported by teachers was varied. Some overall benefits were described with regards improvement in children's emotional vocabulary and expression. Furthermore, some teachers valued the chance to get to know their pupils more and develop positive relationships. However, with regards more specific benefits on mental health and academic outcomes, views were mixed. In particular, some teachers noted the challenges with putting learning into practical use with regards self-regulation and control. Moreover, no specific benefits for children from low SES backgrounds were reported. The mixed perception of benefits viewed by the teachers may have had an impact on implementation, since teachers are less likely to devote time to an intervention they do not believe is working, as discussed earlier. The data from this section also allows further insight into findings from RQ2 and 3, which will be discussed more in the following chapter.

7.7 Summary statements – RQ4

The following summary will provide an overview of the qualitative results detailed in this chapter. Section 8.6 in the following chapter will discuss the implications of the findings from the qualitative strand in relation to the literature base, with section 8.7 detailing the integration with quantitative findings. Additionally, section 8.9 will discuss the overall implications of the findings with regards both quantitative and qualitative strands.

- There were both positive and negative perceptions of need regarding the initial adoption of PATHS. Some teachers hoped the programme would be able to fill a gap in the development of social and emotional skills that children from low SES backgrounds might not have the chance to develop at home. However, some teachers reported that they did not know the reasons for adoption. The relationship between these views and implementation was explored with regards commitment as a result of attitudes towards the programme.
- Overall, there was much implementation variability. With regards dosage, teachers described a range of related factors, such as competing priorities, academic pressures and extracurricular activities. Furthermore, teachers reported adaptations made to the programme, as well as factors which may have influenced lesson quality. This variability in implementation was discussed in relation to the potential moderating effect on outcomes.
- Overall implementation was influenced by a number of factors. At the programme level, teachers reported issues with the prescriptive lesson plans and cultural transferability of the programme. Again, commitment was influenced by feelings that universal intervention was unnecessary. At the school level, teachers highlighted competing priorities, the emphasis on academic learning and a lack of senior management support. Additionally, wider generalisation was hindered by lack of parental engagement. These factors all contributed to implementation variability.
- The perception of impact of PATHS was also mixed. While teachers highlighted benefits to children's emotional vocabulary and expression, direct impacts on behaviour and academic attainment were not clearly seen. Furthermore, no specific benefit for children from low SES backgrounds was reported. The relationship between perceived impact and implementation was acknowledged, as well as the opportunity for confluence with the quantitative findings provided.

Chapter 8:

Discussion

8.1 Introduction to chapter

The aim of this study is to examine differential gains of the PATHS curriculum for children from socio-economically disadvantaged backgrounds at risk of poorer outcomes. Four key research questions were identified in order to support this overall aim. This chapter provides a discussion of the findings and the overall conclusions from the study, in relation to these research questions, in distinct sections. First, section 8.2 summarises the results for each of the four research questions. This is followed by sections 8.3-8.6 which discuss the results of each research question in relation to the relevant literature. After this, section 8.7 details the integration of the quantitative and qualitative strands, as part of the mixed methods design of the study. Section 8.8 provides an overview of the limitations of the study in order to provide a transparent assessment of the results. This is followed by section 8.9, which discusses the key implications of the findings. Section 8.10 highlights areas for future research identified by the study. Then, section 8.11 outlines the original contribution to knowledge made by the study. Finally, section 8.12 includes an overall summary of the study and concluding statements.

8.2 Restatement of results

Research question 1 examined whether socio-economic disadvantage is associated with risk of poorer academic and/or mental health outcomes in children. Specifically, whether there was a difference between participant children who were eligible for Free School Meals (FSM), and their non-eligible peers, in academic outcomes (mathematics and reading) and/or mental health outcomes (externalising problems, internalising symptoms and pro-social behaviour). As the academic and mental health outcomes were scored differently, outcome raw scores were converted to z-scores (see section 6.5.2) and effect sizes reported for each finding for ease of interpretation. This is the same for all findings reported.

- For the mental health outcomes, children who were eligible for FSM were significantly more likely to score higher on externalising problems ($ES=0.355$, $p<.001$) and internalising symptoms ($ES=0.253$, $p<.001$) than their non-eligible peers. These children were also more likely to score significantly lower on

the pro-social behaviour measure (ES=-0.184, $p<.001$) than their peers who were not eligible for FSM.

- Similarly, for the academic outcomes, children eligible for FSM scored significantly lower in Key Stage 1 mathematics (ES= -0.357, $p<.001$) and English (ES=-0.390, $p<.001$). Therefore, for all 5 outcomes measures, children who were considered socio-economically disadvantaged were at risk of poorer academic and mental health outcomes than their more affluent peers.

Research question 2 examined whether there were differential gains in mental health and/or academic outcomes for children at-risk from socio-economic disadvantage, as a result of exposure to the PATHS curriculum over a two-year period.

- For the mental health outcomes, no differential gains were found for pupils eligible for FSM, who received PATHS compared with those eligible for FSM who did not receive PATHS, in pro-social behaviour or internalising symptoms. After the two years, being eligible for FSM, and receiving PATHS, was associated with higher scores on externalising problems (ES=0.165, $p<.001$). The potential reasons for this will be discussed further in this chapter.
- With regard to academic outcomes, the results showed no differential gains in either mathematics (ES=-0.025, *ns*) or English (ES=0.021, *ns*) for pupils eligible for FSM who had received PATHS compared with those eligible for FSM who had not received PATHS.

Research question 3 built on the findings from RQ2 through exploratory analysis of whether differential gains varied as a function of implementation, specifically dosage, fidelity and/or quality of PATHS lessons.

- The sub-group cross level interactions showed no effects of dosage of PATHS on mental health outcomes for children eligible for FSM. However, for academic outcomes children eligible for FSM, who received a high dosage of PATHS resulted in higher scores in Mathematics than those who received only a low dosage of PATHS (ES=0.440, $p=0.04$). There was no effect of dosage on English scores for pupils eligible for FSM.
- The quality of the PATHS lessons delivered had no effect on internalising symptoms or pro-social behaviour for children eligible for FSM. However, for externalising problems scores, children eligible for FSM had higher scores in classes where lessons were rated as high quality (ES=0.224, $p=.04$) or moderate quality (ES=0.191, $p=.04$) compared to low quality lessons.

- Levels of implementation quality were not associated with any academic outcomes for children eligible for FSM.
- Only one significant result was produced for programme fidelity: if programme fidelity was moderate (compared with low) then pupils who were eligible for FSM scored higher on internalising symptoms ($ES=0.307$, $p=0.03$). Otherwise, levels of fidelity were not associated with mental health or academic outcomes for children eligible for FSM.

Research question 4 utilised qualitative data in order to explore teachers' perspectives of implementing the PATHS curriculum, to allow a greater understanding of the potential impact of complex issues around implementation on the quantitative findings.

- The perceptions of need for PATHS were mixed.
 - Some teachers felt that the children would benefit from the programme, due to socio and economic disadvantage and a lack of social and emotional skills.
 - However, some teachers felt there had been limited communication from senior management regarding adoption of the programme, and did not feel that their particular children would benefit from PATHS. This seemed to impact on the overall attitude to delivering PATHS and their “buy in” of the programme.
- Implementation was highly variable.
 - Almost all of the teachers reported that they had struggled to deliver the optimum number of PATHS lessons, as recommended by programme developers. This was due to timetabling issues, competing priorities, academic learning pressures and extracurricular activities.
 - Quality and fidelity of lessons also seemed to vary from recommendations made by programme developers. Some teachers reported adaptations they had made to the programme, while other teachers commented that the prescriptive nature had impacted on their teaching style.
- There were a number of factors which appeared to influence implementation.
 - At the programme level, some teachers liked the readymade lessons as they reduced planning time, while others were put off by the manualised nature of the lessons. Some teachers felt a universal intervention was unnecessary. Cultural transferability also impacted on relevance for some of the children receiving the lessons.

- At the school level, many teachers reported that social and emotional learning was not as high a priority as academic learning. There was a strong focus on OFSTED inspections and school results, to which PATHS was not seen to contribute much. Moreover, many teachers reported a lack of support from senior management in implementing PATHS. Additionally, generalisation appeared to be weak, particularly in the wider school.
- Many teachers reported that engagement with PATHS from parents was minimal, partially due to a lack of home materials included with the programme, and for other reasons such as language barriers.
- The overall perception of impact of PATHS also varied significantly.
 - Although direct impacts on behaviour and learning appeared sparse, many teachers valued the opportunity to discuss social and emotional issues with their pupils.
 - Many teachers did highlight the benefit of the children developing the vocabulary, via PATHS, needed in order to express themselves better.
 - The overall benefit to be mental health and academic outcomes was unclear, with a mixed response regarding improvements to both outcomes.
 - No specific benefit for children from disadvantaged backgrounds was reported.

8.3 Research question 1: Differences in outcomes for pupils at-risk

Is socio-economic disadvantage associated with risk of poorer academic and/or mental health outcomes in children?

RQ1 was a key analysis to begin with in this study, because, as discussed previously, identifying children at-risk from socio-economic disadvantage is notoriously challenging. As Sirin (2005) highlights there is a plethora of research which utilises socio-economic status (SES) as a variable, yet no consistent approach to measurement, leading to much ambiguity in findings. Similarly, Hobbs and Vignoles (2007) found that children eligible for FSM are much more likely to be in the lowest income families. However, they note caution in that some children who are from very low income families do not claim FSM, for a variety of reasons, and therefore are not included in the FSM category. Therefore, before further analysis took place it was important to see if differences occurred between these two groups of children. The results from the current sample indicate that there is a difference between the children eligible for FSM and those not eligible, in both mental health and academic outcomes. Therefore, in terms of utilising FSM as a proxy of socio-economic disadvantage in conferring risk for the current study, it is acceptable for all the outcomes measured. This supports prior research which found FSM had a strong predictive power on academic outcomes, whereas alternatives, such as area data, did not. Although Hobbs and Vignoles (2007) highlight that FSM is an imperfect binary measure of economic disadvantage, they state that this may be only be a minor problem. In the current study, the large sample of participants was beneficial in ensuring any outlier discrepancies were minimised. Additionally, there is a lack of research which utilises FSM as a measure of socio-economic disadvantage to explore the differences in mental health outcomes. In Reiss' (2013) systematic review of the link between socio-economic inequalities and mental health problems in children and adolescents, the majority of included studies analysed the independent impacts of household income, parental educational level, or parental occupation status. Therefore, the current study adds to this gap in the research utilising FSM as a measure to identify children at-risk of poorer outcomes when compared with their non-eligible peers.

The results of RQ1 are in line with previous research which has found socio-economic disadvantage is an established risk factor for poorer outcomes (Bradley & Corwyn, 2002; Green et al., 2005). The following sections will discuss the findings for mental health outcomes and academic outcomes in relation to previous literature.

8.3.1 Mental health outcomes

For all three mental health outcomes, children who are eligible for FSM are at risk of poorer outcomes than children who are not eligible for FSM. This is consistent with a range of previous literature which has found that children from socio-economically disadvantaged backgrounds are at risk of poorer mental health outcomes (McLaughlin et al., 2011; Murali, 2004; Pascoe et al., 2016; Perna, Bolte, Mayrhofer, Spies, & Mielck, 2010; Reiss, 2013; Weich & Lewis, 1998). It has been suggested that exposure to the risk factors associated with a socio-economically disadvantaged background may have detrimental consequences for mental health. Such risk factors include differences in parenting styles, home environment, access to resources, neighbourhood and early childhood education and care which may impact on social and emotional development (Hetzner et al., 2010). In the current study, the mental health outcomes measured were separated into externalising problems, internalising symptoms and pro-social behaviour in order to provide a more comprehensive assessment than some existing studies. As discussed in section 1.2.2, measurement of externalising outcomes is more prevalent in the research base than internalising outcomes, and previous studies have suggested that SES is more closely related to externalising than internalising problems (Ford, Goodman, & Meltzer, 2004; Mcleod & Shanahan, 1993). Moreover, prior research has suggested socio-economic disadvantage affects internalising and externalising problems differently. Costello, Compton, Keeler, and Angold (2003) found increasing the economic status and moving families out of poverty resulted in a significant reduction in externalising behaviours, such as conduct and oppositional defiant disorder. However, internalising symptoms, such as anxiety and depression, were unaffected. Moreover, it is also important to consider that internalising problems are more endogenous than externalising problems, and therefore teacher-report measures are often not as accurate at identifying these problems (Davis et al., 2010). In order to examine these distinct outcomes they were analysed separately, rather than utilising the combined total difficulties SDQ score, which may have led to a skewed perception of findings, particularly if the externalising problems score was large enough to raise the total.

In the current study low SES (as measured by eligibility for FSM) was found to be a significant predictor of both externalising and internalising problems. The largest difference in scores for children eligible for FSM, compared with those not eligible, was the externalising problems outcome ($ES=0.355$). This finding adds to previous research which has found a relationship between SES and externalising behavioural problems (Ackerman, Kogos, Youngstrom, Schoff, & Izard, 1999; Kupersmidt et al., 2000;

Schneiders et al., 2003). The RQ1 analysis also found that children eligible for FSM were likely to score more highly on internalising symptoms than children not eligible for FSM ($ES=0.253, p<.001$). Again, this is in agreement with previous research which has found that family economic status is a significant predictor of internalising symptoms (Bøe, Øverland, Lundervold, & Hysing, 2012; Huisman et al., 2010; Wight, Botticello, & Aneshensel, 2006). As well as consideration of these distinct dimensions, it is important to assess the association between them. The current study is in line with previous research which found an inverse relationship between SES and *both* externalising and internalising symptoms (Rijlaarsdam et al., 2013). The co-occurrence of these two aspects of mental health is also documented in previous literature (Pesenti-Gritti et al., 2008). Therefore it is unsurprising that the current study identified a relationship between low SES and both externalising problems and internalising symptoms.

As well as problem behaviours, it is important to consider positive aspects of mental health, in order to provide a balanced view of mental health outcomes. Although the effect size is smaller than the problem behaviour outcomes, the current findings also show being eligible for FSM predicts lower pro-social behaviour scores ($ES=-0.184, p<.001$). Although the previous literature is much more sparse than that examining the link between SES and problem behaviours, this finding is also in line with studies which have found low SES children display lower levels of pro-social behaviour (Benenson, Pascoe, & Radmore, 2007; Safra et al., 2016). Causal modelling in previous research has shown that pro-social behaviour not only fosters mutually supportive social and intellectual relationships with peers, but reduces the likelihood of internalising symptoms and externalising behaviours (Bandura, 1999; Bandura, Pastorelli, Barbaranelli, & Caprara, 1999). Therefore, it is plausible that the poorer outcomes seen on all three aspects of mental health are the result of a co-morbid effect resulting from risk factors associated with socio-economic disadvantage.

8.3.2 Academic outcomes

For both academic outcome measures (mathematics and English), children who were eligible for FSM scored significantly less than children who were not eligible for FSM, again consistent with the literature that children from socio-economically disadvantaged backgrounds are at risk of poorer outcomes. The current study's findings align with research which found significant associations between low SES and poorer educational attainment (Duncan & Seymour, 2000; Machin & McNally, 2006; Sirin, 2005). As discussed above in relation to mental health outcomes, there are a range of theorised

reasons why children from low socio-economic backgrounds fare worse than peers in outcomes. It is plausible that the common causes which mediate the relationship between low SES and mental health outcomes, such as overcrowding in the home or inattentive parenting, also impact negatively on academic attainment (Masten et al., 2005; Masten & Curtis, 2000).

8.3.3 RQ1 summary statements

- The results showed that children eligible for FSM were at increased risk of poorer outcomes in all three SDQ factors: externalising problems, internalising symptoms and pro-social behaviour.
- The findings in relation to children from socio-economically disadvantaged backgrounds and mental health outcomes are consistent with the literature base which documents a strong inverse relationship between low SES and mental health problems.
- The results also showed that children eligible for FSM were at increased risk of poorer academic outcomes in both English and mathematics, consistent with prior research.
- The findings from RQ1 overall support research on the role of economic risk in exacerbating mental health and academic outcomes.

8.4 Research question 2: Differential gains after exposure to PATHS

Are there differential gains in mental health outcomes (externalising problems, internalising symptoms and pro-social behaviour) and/or academic attainment (English and mathematics) for at-risk children, as a result of exposure to the PATHS curriculum?

RQ2 aimed to examine whether children eligible for FSM, identified as at-risk (following RQ1 analysis) benefitted more or less from undertaking the PATHS curriculum over a two year period, in mental health and academic outcomes. This will be discussed in relation to mental health outcomes and academic outcomes separately.

8.4.1 Mental health outcomes

The results of the current study failed to show significant differential gains for children eligible for FSM, compared with non-eligible peers, after undertaking the PATHS curriculum in internalising symptoms and pro-social behaviour outcomes. Additionally, the findings showed that eligibility for FSM and being in the intervention (PATHS) group predicted *higher* scores on the externalising problems scale, after the two year period ($ES=0.165$, $p<.001$). These findings are surprising, and inconsistent with much of the literature base which suggests SEL interventions are beneficial in enhancing positive social behaviour and reducing negative problem behaviours (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). The SEL logic model, which underpins the PATHS curriculum, posits that an increase in protective factors and a decrease in risk factors will have a positive impact on social, emotional awareness, self-control and social problem-solving (Casel, 2007). In light of the current findings, prior research into the positive effects of PATHS requires further scrutiny. The initial research into the effectiveness of PATHS found positive effects on emotional vocabulary, awareness and understanding (Greenberg, Kusche, Cook, & Quamma, 1995). These are core outcomes which are aimed to be developed through the PATHS curriculum, which, in theory will have a positive impact on antisocial behaviour and social and emotional skills. A link between emotional understanding and vocabulary and behavioural outcomes has been suggested. However, in their examination of the neurocognitive pathways which impact behavioural outcomes, Riggs, Greenberg, Kusché, and Pentz, (2006) found a significant link between verbal fluency and internalising behaviours, but failed to find a link between verbal fluency and externalising behaviours. Additionally, it has been suggested that development of emotional understanding is key in the early primary age range when significant development is occurring (Greenberg et al., 1995). Research into neurocognitive development proposes that preventions may be enhanced if implemented during a period

of peak neurocognitive development, typically in younger children (i.e. between the ages of 5 and 7: Greenberg, Kusche, & Riggs, 2004; Riggs & Greenberg, 2004) This is a key difference to the current study, which utilises an older cohort of children (aged 7-11 years). However, a meta-analysis by Sklad et al. (2012), did not find a significant difference in effectiveness between SEL programmes delivered in primary and secondary schools.

Methodological differences may also go some way to explaining the apparent incongruence between previous research and the current findings. For example, a study into the effectiveness of PATHS by Curtis and Norgate (2007) found significant impact on all five domains of the SDQ after implementation of PATHS, but were limited by observer bias, i.e. the teachers who completed the ratings did so at both time points, and were aware of the expected research outcomes. In contrast, The Conduct Problems Prevention Research Group (1999) found no significant impact on aggression based on teacher ratings, despite finding positive results for peer and observer ratings. The researchers suggest that this may be the result of teachers undertaking ratings at the end of year compared with the start, when they have observed more classroom behaviour, know the children better and children often show more disruptive behaviour later in the year. With regards the current study, in terms of the difference between beginning of year and end of year teacher assessment, both baseline and final measure were completed at the end of the academic year by the teacher who had taught the class all year. Most often this meant a different teacher completing the measure, thus reducing observer bias. However, it is possible that being part of the intervention arm increased teachers' expectations of the impact of PATHS on their children, particularly the ones who had more obvious behavioural problems. Consequently, this may have led to over-reporting as a result of increased awareness (Berry et al., 2016). It is possible that in the current study, overall teachers were more sensitive to externalising problems since there was an increased focus from undertaking PATHS. This seems particularly likely for children who have already shown externalising behavioural problems. Additional methodological differences may also impact on differences between the current study and previous research. For example, Curtis and Norgate (2007) did not use an RCT design and reported significant differences between their intervention and control groups at baseline. These differences included lower levels of behavioural and emotional issues in the control group, therefore the positive findings reported must be interpreted with caution. Furthermore, their analysis did not include a multilevel approach, therefore not considering the clustered nature of the data.

Although there is scarce previous research examining differential impacts for children from socio-economically disadvantaged backgrounds, the theory supporting resilience research suggests that the impact of social-emotional interventions should produce stronger effects for those at risk, and related research has found promising results (e.g. Raver et al., 2009). With regard to the wider SEL literature, Holsen, Iversen, and Smith (2009) found positive results for children from low SES after undertaking a SEL curriculum (Second Step), contradictory to the current findings. However, the outcomes measured were school performance, social competence and life satisfaction, which differ from the current study's outcomes. While they found significant positive effects for social competence, it is possible that this may not have an overall impact on internalising symptoms or externalising behaviours. Conversely, Malti, Ribeaud, and Eisner (2012) failed to find a moderating effect of SES on outcomes after undertaking PATHS, reporting SES risk factors predicted poor behavioural outcomes even at follow up, which is in line with the current study's findings. PATHS is underpinned by an integrative model of children's risk-and-resiliency development, assuming the promotion of protective social and emotional competence factors reduces risk factors for aggression (Greenberg et al., 2003). In this model of development an increase in social competence would have the intended benefit of less externalising problems. Therefore, with regards the current findings, it is possible that these effects do not fully transfer to the outcomes measured for low SES children. PATHS aims to take a preventative approach to improving outcomes, therefore, it is plausible that it is not effective as a remedy for children with existing problems. Referring back to the findings of RQ1, the largest effect size for difference between children eligible for FSM and their non-eligible peers was in externalising problems ($ES=0.355$, $p<.001$). This indicates that there was already a significant issue of externalising problems for children eligible for FSM, compared with their non-eligible peers. A plethora of prior research has highlighted the significant link between SES and externalising symptoms, with a number of longitudinal studies reporting a stronger association between low SES and externalising symptoms, than low SES and internalising symptoms (Amone-P'Olak et al., 2009; Boyle & Lipman, 2002; Davis et al., 2010; Rodriguez, Da Silva, Bettioli, Barbieri, & Rona, 2011). Similarly, in their systematic review of socio-economic inequalities and mental health, Reiss (2013) reported a tendency towards a stronger impact of low SES on externalising problems than internalising problems in the literature. It is therefore possible that the externalising problems seen in this group of children was too great to be resolved by the PATHS intervention.

In this regard, it is important to consider the findings in relation to risk and resilience research. One major challenge with preventative interventions is translating resilience research into meaningful practice in schools. As discussed in Chapter 1, risk is complex and various models (outlined in section 1.5) have been used to provide explanation as to why children who experience more socio-economic disadvantage may be at increased risk of poorer outcomes. The social selection (Peterlin & Scher, 2013) and social causation (Dohrenwend, 1966) models (for full detail about these models, refer to section 1.5.3) contrast by suggesting that poorer mental health is a result of living in adversity (social causation) or that poor mental health leads to adverse circumstances (social selection). With regard children, it is more likely that the adverse circumstances they live in contribute to poorer mental health outcomes, since they often have no, or limited control over their background situation. However, some research has suggested that poor mental health may also have a genetic component, with the possibility that being brought up in low socio-economic background is in part due to poor mental health of parents/carers, as purported by the social selection theory (South & Krueger, 2011). It may be that different combinations of risk factors may lead to the same disorder, and no single cause may be sufficient to produce a specific negative outcome (Greenberg, Domitrovich, & Bumbarger, 2001). This has implications for universal intervention, which may provide only a light touch approach, and is not sufficient to target the multiple risk factors which may contribute to poorer mental health outcomes for children who experience more socio-economic disadvantage.

Additionally, as well as developing key social and emotional competences, contextual risk factors for children from low SES backgrounds play a significant role in contributing to poorer outcomes. Prior research suggests that socio-economically deprived families are disproportionately affected by parental mental health problems, which can have negative consequences for parenting practices conducive to building positive mental health in young people (Brooks-Gunn & Duncan, 1997; Yates et al., 2003). The Family Stress Model (outlined in section 1.5.2) hypothesises that parental mental health, impacted by low socio-economic status, may influence parenting practices (such as inconsistent or harsh discipline, low supervision and involvement and inflexible rigid discipline) which have been found to have a negative effect on children's behaviour (Collins et al., 2000; Landry et al., 1997; Elder & Caspi, 1988). Therefore, at-risk children may have specific needs around their wider contextual environment which require targeted or indicated intervention alongside universal provision. This is in line with research by the Conduct Problems Prevention Research Group (1999a), who utilised a multi-component

programme and developmental model to identify risk factors to target prevention. The unified model of prevention used included both universal intervention (PATHS) and selective intervention (parent groups, child social skills training and academic tutoring) for a sample of children who were displaying externalising behaviours. Although the researchers reported positive findings in relation to behavioural outcomes, there was a significant emphasis on changing parental behaviour alongside PATHS, so it is difficult to clearly identify which aspect impacted on outcomes. With regards wider SEL literature, a study examining the effects of a comprehensive intervention involving teacher training, parental education and social competence training reported that the programme had significantly stronger effects on academic achievement, school attachment and externalising behaviours for children from lower-income families (Hawkins et al., 1999). Again, a key difference between this and the current study is the multi-component model encompassing parental education. As highlighted in section 3.5.2, one criticism of the PATHS curriculum is the limited focus on contextual factors out with school. It is possible that, particularly for children from low SES backgrounds, this is a limitation of the programme which has detrimental consequences for outcomes for some children. This is in line with Domitrovich et al., (2010), who suggests that single interventions may not adequately address the underlying mechanisms contributing to the problems for children at-risk of poorer outcomes. This is particularly pertinent when considering the models which hypothesise the link between low socio-economic status and poorer outcomes (as highlighted in chapter 1). Domitrovich et al., (2010) propose an ‘integrated’ model of provision, which takes a more comprehensive approach to addressing risk and protective factors, focusing on both individual and contextual characteristics.

Another potential explanation of the current findings regards the use of universal intervention. The developmental risk-resilience perspective accepts that all children can benefit from resilience enhancing and risk reduction factors, such as skills in emotional regulation and social competence (Zimmerman, 2013). The universal approach also reduces the stigma attached to attendance of a targeted intervention based on risk characteristics, by delivering to the entire cohort of children (Malti & Noam, 2009). However, there is some concern that universal intervention may have the unintended effect of exacerbating, rather than reducing social inequalities, by providing greater benefits to higher SES populations (Frohlich & Potvin, 2008; Offord & Bennett, 2002). A further contributing factor to the differences in mental health outcomes could be due to the fact that schools may have reduced their targeted or other PSHE provision for pupils who are at increased risk of poorer outcomes in favour of undertaking the universal

provision of PATHS. PATHS schools consistently reported timetabling difficulties (further discussion of this in section 8.6.3), so some displacement was inevitable. Further research examining the impact of PATHS which utilises specific samples of children also requires further scrutiny. For example, the original study by Greenberg et al., (1995) focused on children with special needs, while a subsequent study utilised children who were hearing impaired (Greenberg & Kusche, 1998). A later study by Kam et al. (2004) also found positive effects for children who had special educational needs. The nature of special education means that there are also a number of specialised and individualised programmes being implemented alongside PATHS in these studies. Therefore, it is difficult to ascertain which component is contributing to the positive findings. It is possible that universal intervention, such as PATHS, works well alongside targeted interventions to produce positive outcomes, particularly for children who are at increased risk of poorer outcomes. Furthermore, UP schools may have increased SEL provision as a result of not being randomised to the intervention arm of the trial. One of the common criticisms of RCTs regards compensatory rivalry by the control participants which can occur (Brewer, 2000). This means that control schools react to not being allocated to the intervention arm by initiating behaviour which may lead to the same outcomes as the intervention group (McMillan, 2007). It is possible that the findings from RQ2 reflect an increase in provision by the control schools, and therefore a threat to internal validity. Further analysis including other SEL provision in the schools would have been beneficial in ruling this out, however, it was outwith the scope of the current study to include every potential aspect and risk overfitting models.

As PATHS is an American designed and developed programme, one important consideration is how well it transfers to UK primary schools. Much of the evidence regarding PATHS, and indeed SEL in general, is from the United States, and cultural transferability cannot be assumed (Humphrey, 2013). The current study's findings echo a UK based study into the effectiveness of PATHS which found no statistical effect favouring the intervention group on any of the SDQ components (Berry et al., 2016), albeit as part of an intention-to-treat analysis which differs from the analysis of differential gains undertaken in the current study. It is possible that the positive results found in many of the PATHS studies from the USA do not transfer directly to the UK. Cultural suitability will also be discussed in section 8.5.2 with regards implementation fidelity.

A further potential reason for the findings reported in RQ2 is intervention implementation variability which can impact on outcomes (Domitrovich et al., 2008). This will be discussed in more detail with reference to RQ3 in section 8.5.

8.4.2 Academic outcomes

The results of the current study show no differential gains for academic attainment for children eligible for FSM after two years' exposure to PATHS. This finding is unsurprising considering no positive impact was found for mental health outcomes. The main aim of PATHS is to improve social and emotional learning, which will then have a positive impact on further outcomes, such as academic attainment. Based on the PATHS logic model (www.episcenter.psu.edu) improved academics is a distal outcome, as a result of improved proximal outcomes. As the mental health outcomes did not show differential gains for children eligible for FSM, it is understandable that there were no differential gains for academic attainment either. As discussed in Chapter 3, previous research examining the impact of PATHS on academic attainment is sparse, with only 2 studies including this outcome. While Greenberg and Kusche (1998) did find some significant improvements in reading for hearing impaired children, this was theorised to be as a direct result of improvements in behavioural disruption and self-control which allowed for more time to be spent on-task. This is in contrast to the current study which did not find differential gains in either behavioural problems or academic outcomes for children eligible for FSM. With reference to Greenberg and Kusche's (1998) study, it is plausible to think that the children in the current study did not gain more on-task learning time through reduced behavioural disruption, since there were no significant improvements in this outcome. Furthermore, after the two year period, the children eligible for FSM in the current study still had significantly higher externalising problems than their non-eligible peers, further reducing the likelihood of a positive impact on academic outcomes. This is corroborated by Zins, Bloodworth, Weissberg, and Walberg, (2004), who argue that SEL acts as a critical element in developing positive classroom environment, through positive attitudes, behaviour and performance, conducive to learning and subsequent academic success. This is in line with previous research which reported improved academic achievement, but also a drastic reduction in disciplinary referrals after implementation of an SEL intervention (Flay, Allred, & Ordway, 2001). While there is a lack of research examining the impact of PATHS on academic attainment, previous meta-analyses have reported positive impacts of SEL interventions on academic outcomes (e.g. Sklad et al., 2012). However, a key difference is most studies take an intention-to-treat approach, in contrast to the current study which examines outcomes

specifically for children from socio-economic disadvantaged backgrounds. Previous research which found a link between children from low socio-economic status backgrounds and lower academic attainment propose the Family Investment Model (outlined in section 1.5.1). This model suggests that children who experience more socio-economic disadvantage are at an increased risk of poorer academic attainment due to a lack of enriching resources, services and experiences which benefit child development and learning, outside of school. Again, as discussed in the previous section, this is another contextual factor which is not targeted by a universal intervention such as PATHS, and may also contribute to the lack of impact of the programme on the academic attainment of children eligible for free school meals.

The current study's results are also in contrast to the findings by Schonfeld et al. (2014), who found greater basic proficiency in reading and maths in Year 5, and writing in Year 6 and 7, after undertaking PATHS, compared with controls. However, the effect sizes in this study were small. Moreover, PATHS was delivered over a four-year period, so it is possible that the two-year period used in the current study was not sufficient to trigger the expected change in outcomes. Since improvements in academic attainment are regarded as a distal outcome of PATHS, it is worth considering that the length of project was not adequate enough to allow measurable improvements of academic achievement to be found. However, this is in contrast to the findings to other SEL intervention studies, who have reported improvements in academic outcomes, in shorter time periods (Durlak et al., 2011; Sklad et al., 2012). For example, 77% of the interventions reported by Durlak et al. (2011) were undertaken for less than one year.

Furthermore, as mentioned previously, the findings from RQ2 may be impacted by variability in implementation of the PATHS programme. This will be discussed in more detail with regards to RQ3 implementation-outcome analysis below.

8.4.3 RQ2 summary statements

- No differential gains for children eligible for FSM after undertaking PATHS in mental health or academic outcomes found.
- Being eligible for FSM and being in the treatment (PATHS) arm of the trial predicted higher externalising problems at the end of study.
- Some methodological differences, including outcomes measured and use of teacher-report measures, may account for apparent incongruence between findings and literature base.
- Findings add to sparse and mixed literature base on potential benefits for children from low socio-economic backgrounds.
- Discussion of the findings included:
 - the difficulties in translating resilience research into school-based practice
 - contextual issues in reducing risk factors and enhancing resilience that may not be addressed through PATHS
 - the potential role of targeted intervention alongside universal intervention
 - issues with cultural transferability.

8.5 Research question 3: Association between implementation variability and outcomes

Do any differential gains vary as a function of implementation (dosage, quality)/participant responsiveness and fidelity)?

RQ3 aimed to build on the findings from RQ2, by conducting preliminary analysis examining the association between PATHS implementation variability and mental health and/or academic outcome gains for children eligible for FSM. This will be discussed in relation to dosage, fidelity and quality-responsiveness separately.

8.5.1 Dosage

No effect of dosage variability was found on mental health outcomes for children eligible for FSM. Dosage refers to how much of the PATHS curriculum was delivered, which can be significant in understanding how much of the programme children were actually receiving. As discussed in Chapter 4, dosage is one of the most reported measures of implementation, mainly due to the relative ease of quantifying the data. However, there is still some contention regarding the importance of dosage on outcomes. For example, some research found more positive outcomes based on high dosage compared with low dosage (e.g. Rosenblatt & Elias, 2008), while others found very little evidence of an association between the two (e.g. Domitrovich et al., 2010; Lillehoj, Griffin, & Spoth, 2004; Resnicow et al., 1992). Although there is a mixture of research findings around dosage, the results from the current study adds to the literature which failed to find a significant link between implementation dosage and mental health outcomes. One key finding differentiating the current study and the previous literature is the variability in dosage reported. For example, the Domitrovich et al. (2010) study utilised teacher self-report of implementation dosage, which resulted in limited variability with most teachers reporting very high dosage rates. However, the current study utilises independent observational data, which minimises the risk of inflated self-reports. While this highlights the need to examine dosage reporting strategies, nevertheless, the findings still remain similar. The current study's findings of no significant relationship between dosage and mental health outcomes is also in contrast to other research. For example, Faria, Kendziora, Brown, Brien, and Osher (2013) found a significant positive association between PATHS dosage and outcomes. It is important to consider that the results in the current study could be linked to a failure to achieve a high enough dose to produce an impact on outcomes (Humphrey, Barlow, & Lendrum, 2017). While, the dosage levels reported in the current study are comparable to those in Faria et al., (2013), a key

difference in the current study is the sub-group analysis of children from low SES backgrounds. It is also possible that the incongruence between the results are due to other methodological differences. In light of the findings from RQ2, which did not find PATHS had significant positive impact on mental health outcomes overall, it is unsurprising that the study also failed to find an association between dosage and outcomes. If PATHS alone does not impact overall on mental health outcomes for children eligible for FSM, then it makes sense that dosage variability would not yield significant results either.

With regards the academic outcomes, the results in the current study show that higher dosage of PATHS is associated with higher scores in mathematics for children eligible for FSM ($ES=0.440$, $p=0.04$). This supports prior research by Schonfeld et al., (2014) who found the number of PATHS lessons delivered was a significant predictor of Year 7 proficiency in maths. The association between dosage and mathematics outcomes is surprising given that no significant positive findings were found for the mental health outcomes. It is further surprising in light of the main effect which found high dosage was associated with lower mathematics scores for pupils overall. Studies which examine implementation variability on both mental health and academic outcomes are exceptionally rare, therefore, it is difficult to make comparisons. Furthermore, the effect of implementation variability on outcomes specifically for children eligible for FSM has not been seen previously in the literature, making direct comparisons with prior research impossible. While Schonfeld et al., (2014) did find a positive association between the number of PATHS lesson delivered and academic outcomes, they did not measure mental health/behavioural outcomes, so examination of the link between the two outcomes cannot be undertaken. It may be that there is another factor which acts as a mediating variable between higher dosage of PATHS and academic outcomes. With regards to the current study, this seems to be of particular significance for children eligible for FSM, given the difference in findings for the overall sample. For example, the development of a supportive learning environment has been found to have the benefit of pupils feeling more attached to school, be more engaged and put in more effort (Zins et al., 2004). Furthermore, development of positive relationships with teachers may mean children are better able to seek help when needed (Hawkins, Farrington, & Catalano, 1998). This is also reflected in section 8.6.4 in the analysis of qualitative data which supports the idea of development of teacher-pupil relationships via PATHS. It may be possible that through regular implementation of PATHS, positive teacher-pupil relationships are developed as well as a positive learning environment, contributing to improved academic outcomes.

Another possible explanation for the positive impact on the maths outcome for children eligible for FSM, associated with higher dosage of PATHS found in the present study, is the difference in the PATHS curriculum taught to specific year groups. The Year 6 PATHS curriculum includes direct teaching on skills relating to academic achievement. For example, the focus of Unit 2 of the Year 6 programme is on study and organisational skills, a key difference between the Year 6 PATHS programme and the PATHS programme for other year groups. Therefore, higher dosage classrooms are more likely to have delivered all of the lessons relating to key academic skills. Study skills have been found to be fundamental to academic achievement, and have been associated with positive outcomes across multiple academic content and for a range of learners (Beidel, Turner, & Taylor-Ferreira, 1999; Gettinger & Seibert, 2002). Moreover, in the CASEL (2003) review of 80 SEL programmes, 34% included methods to promote the integration of SEL with academic learning and teaching practices, for example applying goal setting to improve study habits or building skills in cooperative learning. Of these, 83% produced academic gains. This may highlight the requirement for including a focus on academic learning alongside SEL skill development. Additionally, in relation to the direction of developmental cascades, while it is often assumed that reducing externalising behaviour in the classroom may positively impact on academic outcomes, it may be the other way around. Preventative interventions that boost academic competence have shown corresponding reductions in risk for developing behavioural problems, though it is unclear whether such interventions work by reducing the negative effects of externalising behaviour in the classroom, or by improving academic skills (e.g. Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999). Although the current study did not find corresponding relationship with externalising behaviour problems, it is possible that interventions which include the promotion of key academic skills may have a distinct impact on academic outcomes, which in turn may have a positive impact on externalising outcomes over time. Furthermore, as discussed in section 8.4.1 a number of PATHS studies have found positive results based on measures which assess impact on outcomes designed to be directly developed by the intervention (e.g. they are ‘inherent to treatment’). For example, measuring changes in emotional vocabulary which is a key aim of the PATHS curriculum (Greenberg et al., 1995). It is therefore possible that for the Year 6 curriculum, the lesson content has a direct impact on academic achievement.

8.5.2 Fidelity

There was only one significant finding relating to programme fidelity and mental health outcomes – moderate programme fidelity (compared with low) was associated with higher internalising problems for children eligible for FSM (ES=0.307, $p=0.03$). High fidelity did not yield any significant findings in relation to mental health outcomes. Fidelity was not associated with significant results for academic outcomes. In terms of the literature base, fidelity is a complex and contentious issue. One view is based on the implicit assumption that for outcomes of an evidence-based intervention to be replicated, they must be implemented with exact fidelity, i.e. higher fidelity equals better outcomes (Elliott & Mihalic, 2004). Another view is that some adaptation is a realistic, and indeed necessary, aspect of real-world intervention implementation (Lendrum et al., 2016).

Previous research examining PATHS implementation and outcomes has found no link between fidelity and outcomes, although these studies utilise an intention-to-treat approach (Berry et al., 2016; Humphrey, Barlow, & Lendrum, 2017; Social and Character Development Research Consortium, 2010). With regards to the current study, the use of a particular sub-sample of children from low socio-economic backgrounds may impact on the variation in findings. Most of the literature around fidelity takes an all or nothing approach – comparing either high fidelity or low fidelity, and the findings are often far from straightforward. Therefore, there is difficulty in comparing the present study's findings, given that analysis including moderate fidelity is rarely examined. It is possible that the current study's findings supports the idea that changes to a programme may have detrimental consequences on outcomes for children eligible for FSM. In terms of the internalising symptoms outcome, it is possible that adapting the PATHS curriculum somewhat may lead to diminished coverage of key components, which may draw attention to internalising symptoms without fully solving the issues. This is in line with research by Stallard et al. (2012) who found negative effects on internalising symptoms in their school-based intervention trial for adolescents with depressive symptoms. The authors suggest higher rates of symptoms may reflect greater self-recognition and acknowledgement of existing symptoms of depression and negative thinking styles. In the current study, this may be particularly true as the children eligible for FSM had higher levels of internalising symptoms at baseline.

Moreover, as already discussed in relation to RQ2, it is possible that the introduction of PATHS displaced a more targeted intervention, which may have had detrimental consequences for the children at-risk. Again, if fidelity meant that key concepts were not

covered via the PATHS curriculum, it is possible these children were not undertaking key activities in enough detail in order to have a positive impact on internalising symptoms. In their meta-analysis of interventions that aim to prevent depressive symptoms in children and adolescents, Horowitz and Garber (2006) found targeted intervention programmes were more effective than universal prevention programmes.

Alternatively, it is also possible that the programme was not adapted enough to fully meet the needs of the children in specific classroom contexts, particularly in relation to children from low socio-economic backgrounds. As Castro, Barrera, and Martinez (2004) note in order for an intervention to be successful, it must be relevant and inclusive for the diverse population within a school. For example, a preventative intervention programme developed and validated primarily with middle-class children may lack fit and relevance by not addressing issues affecting low socio-economic status children. Furthermore, school contexts are dynamic, with changing pupil populations and cultural contexts which may mean that adaptations will vary from setting to setting (Ferrer-Wreder, Sundell, & Mansoor, 2012; Lendrum et al., 2016). Dusenbury, Brannigan, Hansen, Walsh, and Falco, (2005) argue that programme adherence and adaptation must ensure congruence with participants' developmental and cultural needs. This is a complex issue, as there is a fine balance between adapting in order to appeal to the target audience, and adapting so much that programme effectiveness is compromised. As Hansen et al., (2013) suggest there should be support and guidance with regard making adaptations, for example adaptations should be made sparingly and appropriately. Similarly, the adaptations must ensure that the goals and objectives of the intervention are still met (e.g. the teacher modifies names to be more relevant in order to engage the pupils). A methodological issue in the current study is the use of three observation category ratings of fidelity – this does not give the whole picture of adaptations being made, which may vary even within category (i.e. one teacher with a moderate fidelity rating may make adaptations to lesson structure, while another may make adaptations to content). Understanding of the adaptations made may help to understand what aspects are directly linked to outcomes. For example, it may be permissible to moderately change the structure of a lesson, but detrimental to change any of the content even temperately. Therefore, while the findings in the current study appear to be reflective of change in fidelity, it is impossible to say exactly which and how adaptations have impacted. Adaptations in the current study will also be discussed further in reference to research question 4.

8.5.3 Quality-Responsiveness

With regards to programme quality, the current study found a relationship between children eligible for FSM and higher externalising scores in classes where lessons were rated as high quality/responsiveness ($ES=0.224$, $p=.04$) or moderate quality/responsiveness ($ES=0.191$, $p=.04$) compared to low quality/responsiveness lessons. This finding is far from straightforward, and there are many difficulties in drawing direct comparisons with the literature base, due to the complexities of defining and conceptualising implementation quality, as well as methodological differences between studies. Moreover, implementation concepts such as fidelity are included more often in implementation variability-outcomes analysis than quality. In their seminal review, Durlak and DuPre (2008) note that 63% of studies focused on fidelity as the primary indicator of implementation, with only 10% focusing on quality, with mixed findings.

One key difference in relation to the previous literature which examines implementation quality and outcomes is the conceptualisation of quality. In rare studies which report their findings in relation to PATHS implementation quality and outcomes, the measurements of quality vary. For example, Kam, Greenberg, and Walls (2003) measured quality through two ratings of: “How well are PATHS concepts and skills taught by the teacher?” and “How well is the teacher generalizing PATHS skills across the school day?”, although they found no significant results of association between quality and outcomes. Similarly, although no significant findings were reported, Goossens et al., (2012) considered quality as conceptual use of PATHS, “i.e. to what extent do teachers act according to the PATHS basic principles”. Furthermore, in these two studies, the lines between quality and fidelity are blurred. The quality of the lessons is judged on the extent to which PATHS concepts are being taught. Within the literature, quality is arguably the most obscure implementation concept, and is often used interchangeably with fidelity (Humphrey, 2013). This is linked to the ongoing debate regarding adaptation, in which some view adaptation as a risk to implementation quality (Lendrum et al., 2016). In the current study, quality was rated on aspects such as “how well prepared/enthusiastic/engaged is the teacher delivering the lesson”, regardless of whether the lesson was being delivered with fidelity (Durlak & DuPre, 2008). The factor analysis conducted on the implementation data confirmed that quality-responsiveness and fidelity are discreet dimensions (Berkel, Mauricio, Schoenfelder, & Sandler, 2011; Humphrey et al., 2017). Therefore, it is possible that although observed lessons were of a high quality in terms of teacher delivery and engagement, the lessons may not have covered key outcomes. Therefore, while the

lessons were “good” lessons, they may not necessarily have been wholly PATHS lessons. This may highlight a difficulty in implementing a rigid curriculum in the UK education system where teachers have autonomy to adapt lessons to fit their teaching style and the needs of the pupils.

Some previous research has emphasised the importance of quality-responsiveness over fidelity. For example, Pettigrew et al. (2015) found implementation quality and participant responsiveness were more reliable predictors of intervention outcomes than fidelity. However, this is based on a general sample of children, who may not require such full development of fundamental skills. This is reflected in the current study which, in contrast to the findings for children eligible for FSM, found positive main effects in externalising and internalising behaviours for all pupils in classrooms where PATHS was being delivered with high quality compared with low quality. As discussed previously, PATHS is a preventative programme, and therefore may not be as effective for children who have already developed externalising and internalising problems. For children showing early signs of mental health problems, an indicated prevention approach has been found to be more beneficial in halting progression (McGorry, 2013). For children at-risk, as seen in the current study, it may be more important that key outcomes in a social and emotional learning programme are explicitly covered in high quality lessons, in order to increase protective factors and reduce the risk factors associated with exacerbating externalising behaviours. In this regard, a key difficulty in including implementation variability on differential gains analysis is disentangling fidelity and quality as distinct concepts.

Additionally, it is important to consider the findings of RQ3 in relation to the previous RQ findings. As seen in the findings from RQ1, with regards mental health outcomes, the gap is largest between pupils eligible for FSM and their peers for externalising problems. Therefore, the greatest impact on differential gains would need to be seen for this outcome. Moreover, as RQ2 findings show, children eligible for FSM in the intervention group showed higher scores in externalising problems than the control group. It may be that PATHS does not have a positive impact on externalising problems for children eligible for FSM, and lesson quality would be inconsequential in this regard. Furthermore, the effect size is small for the two significant findings and so may be the result of the analysis. Most classes observed fall into the moderate and high quality-responsiveness categories, therefore it is likely that the findings are a reflection of the overall finding of high externalising scores found in RQ2.

8.5.4 RQ3 summary statements

- Variability in dosage of PATHS was not found to significantly impact on mental health outcomes for children eligible for FSM.
- The previous research regarding dosage is mixed, however the current study adds to the literature which failed to find a link between dosage and outcomes. The discussion examined differences in measuring dosage in prior studies, as well as potential reasons for incongruence with other studies.
- Higher dosage of PATHS was associated with higher scores in maths for children eligible for FSM. This finding is in line with a previous study which also found the number of PATHS lessons to be associated with significant academic gains.
- Reasons for this finding were discussed, in relation to positive learning environment and enhanced pupil-teacher relationships which have been seen to contribute to improved academic outcomes.
- Moderate fidelity was found to be associated with higher internalising symptoms for children eligible for FSM.
- Discussion focused around the fidelity/adaptation debate which is prevalent in the literature base, and the potential reasons for the current study's finding in relation to fidelity.
- A surprising finding of high and moderate quality lessons predicting higher externalising problems for children eligible for FSM was reported.
- This finding was discussed in relation to the sparse previous literature examining the relationship between implementation quality and outcomes.

8.6 Research question 4: Teachers' perspectives of PATHS implementation

What are teachers' perspectives in relation to implementation of the PATHS curriculum? (Qualitative strand)

Research question 4 aimed to examine teachers' perspectives and experiences of delivering PATHS, in order to provide some explanation for some of the quantitative findings from the previous research questions. In this section the four main themes that emerged from the qualitative phase of the study are discussed in relation to the previous literature base. As the current study uses a complementarity mixed methods design (QUANT → *qual*), with the qualitative strand offering an elaborative element to the previous findings, some of the referenced literature converges, however, replication has been avoided where possible. The following section 8.7 discusses the integration of the approaches. The following section has been separated into the key themes for ease of interpretation.

8.6.1 Perception of need

Perception of need of the PATHS curriculum varied greatly, based on the individual contexts that teachers were working in. It is key to understand teachers' view and beliefs surrounding SEL and the need in their particular context, as this has been seen to have a direct impact on implementation variability (Baker et al., 2010). In the current study, some teachers were positive about the need of PATHS in their school for a range of reasons, such as current lack of key skills, development of protective factors (e.g. self-regulation), reduction of risk factors (e.g. for children from low socio-economic backgrounds who may not have the opportunity to develop skills outside of school) and improvement of current behavioural issues. This reflects the views taken by researchers of PATHS (e.g. Greenberg, Domitrovich, Graczyk, & Zins, 2005), who also perceive schools to be an appropriate setting for SEL interventions to take place, particularly in areas of deprivation when key skill development may not be supported in children's home lives.

However, some teachers were critical of the reasons why PATHS had been adopted by the school, particularly if they felt there had been limited consultation before implementation, or if they felt the programme was unnecessary for their particular pupils. This also impacted on their 'buy in' of the programme, and may also account for some of the variability seen in implementation. Prior research suggests that contributing factors

to effective implementation of a programme include the fostering of a shared and collective vision between staff and senior leadership, support for new innovations, and alignment of core values promoted by the programme (Beets et al., 2008). This is also in line with previous research which has found that teacher commitment can impact on implementation. Baker et al., (2010) found that teachers' concerns about an intervention, including difficulties in implementing or perceiving the programme as not useful, directly impacted on participation. The researchers highlight strategies for teachers who were resistant to implementing the programme, such as supportive consultants who were used to develop positive relationships and rewards to improve teachers' motivation and commitment.

It is important to gauge an understanding of teachers' attitudes and beliefs regarding the need for SEL as these can impact how a teacher implements an SEL programme (Collie, Shapka, Perry, & Martin, 2015). For example, it has been found that teachers who believe in SEL embed it within the context of lessons, as well as undertaking generalisation activities outwith formal lessons, through modelling, coaching and scaffolding (Zinsser, Shewark, Denham, & Curby, 2014). Moreover, teachers' positive beliefs around SEL have been associated with greater confidence in delivering SEL and openness to SEL programmes (Brackett, Reyes, Rivers, Elbertson, & Salovey, 2012). Additionally, although the literature base around teacher attitudes to SEL are sparse, previous studies report variations in teacher beliefs about SEL (Collie, Shapka, Perry, & Martin, 2015). This is also true of the current study which found mixed teachers' beliefs and perceptions of need of PATHS. This may have detrimental impacts to implementation of the programme from the beginning, and may emphasise the need for initial in-depth training and support for teachers, in order to promote commitment.

8.6.2 Implementation variability

The main finding from this section is that, overall, teachers reported high implementation variability. With regards dosage, almost all teachers reported that they had struggled to deliver the full number of PATHS lessons for a variety of reasons, including timetable constraints, competing priorities, academic learning pressures and extracurricular activities. This echoes prior research which found there is more pressure in schools to cover academic content (Humphrey, Lendrum, & Wigelsworth, 2010). This finding is also in line with previous qualitative research into PATHS, which reported teachers' concerns over the emphasis placed on academic learning, particularly in relation to school targets (Seifer, Gouley, Miller, & Zakriski, 2010). This highlights the need for SEL

developers and education practitioners to identify the link between SEL and academic learning theoretically, empirically and practically, in order to ensure enough time for both academic and SEL learning.

The findings from RQ4 also identify that the fidelity of lessons seemed to vary. Many teachers reported that they had made adaptations to the programme. Adaptations in school-based interventions are a common occurrence (Durlak, 2016). The current findings are in line with previous research which also reported teachers had made small adaptations to the PATHS programme, in order to better meet the needs of children in specific classrooms (Hughes & Cline, 2014). As discussed in Chapter 4, one important aspect of assessing the impact of an intervention involves consideration of what works in the real world, with the omission of implementation data preventing a realistic view of how a programme has been implemented or the chance for replication (Century, Rudnick, & Freeman, 2010; Domitrovich & Greenberg, 2000). The teacher accounts of fidelity in the current study add to literature which suggests that adaptation is inevitable in a real-world context (Durlak & DuPre, 2008; Lendrum et al., 2016). The literature base suggests that practitioners are likely to make changes or modifications to improve the contextual fit, or meet their specific pupils' needs (Chambers, Glasgow, & Stange, 2013; Hansen et al., 2013). This is echoed by the teachers in the current study, who also reported they had modified aspects in order to increase relevance or fit for their particular pupils. In this regard, it may be that the recommendation to stick rigidly to the programme is unviable, and programme developers should provide explicit guidance on modifications which can be made which will not have detrimental consequences to outcomes, based on in-depth research into this.

As highlighted previously, implementation quality is a difficult factor to assess through implementer interviews, as teachers are unlikely to report poor quality lessons they have facilitated. However, there were aspects highlighted by teachers which may have impacted on implementation quality. For example, some teachers commented that the prescriptive nature had impacted on their teaching style. This further reflects the fidelity-adaptation contention which dominates implementation literature, ensuring scope for adaptation to meet the needs of a specific class context, while maintaining programme integrity. Additionally, this is in line with UK based research into good teaching practice, which suggests that there is a practitioner move away from delivering prescribed lessons to utilising creativity and autonomy to develop engaging lessons (Braund & Campbell, 2010).

The current findings, which highlight significant variability in implementation, are somewhat different to those found by Curtis and Norgate, (2007) who present a focus on the mostly positive experiences of implementation, with high dosage and fidelity to the programme. They attribute the positive quantitative results to the quality of implementation reported in the quantitative findings. In the current study, implementation variability reported by teachers in the qualitative strand was much more mixed. However, the mixed findings reported in the current research also reflect the honesty and transparency of the teachers being interviewed regarding both strengths and difficulties in implementation. Again, this may also be reflective of implementation of interventions in a 'real-world' context, as discussed previously.

These findings, which suggest a range of implementation variability, are significant in order to contribute to the understanding of realistic implementation of SEL in the UK context. Additionally, it is important to consider the contexts in which implementation of PATHS was undertaken in the current study. As described in section 5.5.1 of the methodology chapter, the participating schools in the current study contain higher than average numbers of pupils from low socio-economic backgrounds (31.03% pupils eligible for FSM compared to the national average of 19.3%: Department for Education, 2012). The Conduct Problems Prevention Research Group (2010) suggests disruptive climates, such as those found in schools with higher numbers of children from disadvantaged backgrounds, may affect the utility of different approaches to preventive intervention. Prior research also suggests that the demands of implementing SEL programmes may overwhelm the resources at schools with higher levels of disadvantage, resulting in poor implementation and low impact (Hughes & Cline, 2014).

8.6.3 Factors affecting implementation

There were a number of factors which impacted on implementation. Mixed views were found with regards to the resources provided in PATHS. Negative attitudes towards the resources were also highlighted in a qualitative PATHS study by Seifer et al. (2010), who suggest that it is beneficial to consider how to develop materials that are attractive to teachers. This may indicate that presentation of resources can have an impact on teachers' attitudes towards the programme, which in turn can affect implementation (Baker et al., 2010). Additionally, a recurring theme regarding mixed attitudes to the readymade, prescriptive lessons was found. This links to section 8.6.2 regarding practitioner autonomy of lesson development which is prevalent in the UK education context.

Furthermore, some teachers reported cultural transferability issues, for example, the “American language” utilised throughout. This is consistent with Hughes and Cline's (2014) UK-based study which also reported teachers' concerns over the lessons being “too American”. However, in this study school staff changed American expressions and story aspects to more English language and scenarios - minor adaptations in line with recommendations by Domitrovich et al., (2010). Although the PATHS resources used within the current study had been culturally adapted (by Barnardo's) for a UK audience prior to implementation, teachers still reported cultural transferability issues. This raises questions regarding the amount of adaptation required to fully Anglicise the programme, while maintaining enough fidelity to replicate positive findings found in previous research into PATHS. In their SEL meta-analysis, Sklad et al. (2012) reported similar overall effect sizes when comparing effect studies originating in the US with effect studies from other parts of the world. This indicates that the development of SEL skills may be beneficial to children from various natural and cultural contexts. However, it may be that there are practical challenges associated with cultural transferability, such as language differences. Furthermore, since this was a concern raised by many teachers in the current study, it may be that there is a link between teachers' attitudes to a programme and cultural transferability. Additionally, some teachers reported issues with accessibility of the programme for children from socio-economically disadvantaged backgrounds, suggesting that some of the content was irrelevant for these pupils. As Schinke and Matthieu (2003) report, programmes are most effective when tailored to the cultural, community, and developmental norms of the participants. While there is a focus in the literature on adapting interventions to be culturally sensitive for different ethnic groups (e.g. Castro et al., 2004; Kumpfer, Alvarado, Smith, & Bellamy, 2002), perhaps this needs to be extended to encompass the cultural differences in socio-economic backgrounds.

At the school level, the recurring theme of competing priorities was found, which had an impact on implementation of PATHS. There was a strong focus on OFSTED inspections (UK quality monitoring agency) and school results, which PATHS was not seen to contribute directly to. This finding again echoes previous research which found teachers were torn over their personal beliefs about the benefits of PATHS versus the school targets and academic results tables that their performance was monitored against (Seifer et al., 2010). Moreover, in the current study, many teachers reported a lack of support from senior management in implementing PATHS. This finding is in line with a study by Kam, Greenberg, and Walls (2003) who noted that support from school senior leaders and high quality implementation by teachers was associated with lower levels of

children's externalising behaviours and social incompetence. This is significant since an intervention effect was only found when stratified by senior leadership support and implementer characteristics. The researchers conclude that adequate support from school senior management contributes to the success of the PATHS intervention.

Additionally, generalisation appeared to be weak, both through parental engagement and within the wider school context. Many teachers reported that engagement with PATHS from parents was minimal, partially due to a lack of home materials included with the programme, and for other reasons such as language barriers. Furthermore, teachers reported that PATHS was not referred to outside of the classroom, with missed opportunities to reinforce learning. Related to this, teachers noted that, while staff delivering PATHS understood the key concepts, there was a general lack of awareness in the wider school, including senior management. This is a theme also reflected in a qualitative UK-based study by Kelly, Longbottom, Potts, and Williamson (2004) who reported teachers emphasis on the importance of the quality of children's interactions within a whole school context, in terms of generalising positive effects. They highlight the school ethos as being central to supporting mechanisms of individual and systemic change. As highlighted in section 2.4.2, contextual factors are significant to the development of resilience. Within schools the ethos/climate has been seen as a major contributor in pupil outcomes (Rutter & Maughan, 2002). The aims of PATHS are ideologically broader than the specific curricular lessons and also aim to positively impact on the wider school context. In terms of generalisation, Greenberg et al. (1995) noted significant variation among teachers on factors such as modelling, sharing of emotions, establishing a respectful environment for the feelings/beliefs of others, as well as recognition on a daily basis of both interpersonal problems and emotional issues. They suggest that this continuous reinforcement is vital in realising the full potential impact of SEL programmes on outcomes. As discussed previously, the recurring theme of competing priorities and general lack of time may have impacted on generalisation and uptake of PATHS in the wider school context. This may indicate more emphasis is needed on the whole school implementation of SEL, as well as ways to engage parents in order to ensure adequate generalisation out with curricular lessons.

8.6.4 Perception of impact

Overall the perception of impact of PATHS was found to be varied based on teacher responses. Although direct impacts on behaviour and learning appeared sparse, many teachers valued the opportunity to discuss social and emotional issues with their pupils,

while others felt it had allowed them to develop positive relationships and increase understanding of their pupils. Moreover, many teachers highlighted the benefit of the children developing the vocabulary needed in order to express themselves better. This is consistent with prior research which found teachers perceived PATHS to have helped children acquire a better understanding of emotions (Curtis & Norgate, 2007; Honess & Hunter, 2014). Furthermore, this is in line with initial research into PATHS which found a positive impact on emotional understanding and awareness (Greenberg et al., 1995, 2004)

The overall benefit to mental health and academic outcomes reported by teachers was unclear, with a mixed response regarding improvements to both outcomes. Some teachers reported that while they perceived PATHS to have increased pupils' emotional understanding and provided learning in self-regulation, putting the strategies into practice when needed seemed to happen less often. Prior research has also reported teachers' concerns that children do not have the ability to minimise impulsivity and stop and think before reacting (Hughes & Cline, 2014). However, this was associated with a younger age group than the current cohort. Nevertheless, the current findings suggest differences between learning strategies around self-regulation and control and having the ability to put them into practice when required. This is also in agreement with previous PATHS findings which highlight that while PATHS does increase emotional vocabulary and expression, it is less effective on behavioural outcomes. For example, Riggs et al., (2006) failed to find a relationship between verbal fluency and teacher-reported externalising behaviours.

Despite many teachers stating that a key reason PATHS had been adopted in their school was a greater need for developing key social and emotional competencies, due to the higher number of children from low socio-economic backgrounds, no specific benefits for children from socio-economically disadvantaged backgrounds were reported. Furthermore, some teachers expressed concerns that the programme was not effective for the hardest to reach children, i.e. those with specific mental health problems, who they felt may require more intensive interventions. This is a similar finding to that of Seifer et al., (2010) which reported that teachers felt that the PATHS lessons were not useful for children who had the most social and behavioural problems. One reported reason for this was due to the lack of conflict resolution strategies within the programme. The authors attribute this finding as a reflection of the incomplete implementation of PATHS, since the conflict resolution strategies are found later on in the curriculum. This may be

similar to the current study in which the difficulties of implementing the entire programme may have impacted the number of conflict resolution strategies actually taught. Additionally, it may be that implementing a universal social emotional programme, such as PATHS, does not have the desired effect for children with existing mental health/behavioural problems. This is consistent with the qualitative aspect of Hughes and Cline's (2014) study which reported that teachers raised concerns that PATHS was no good for pupils with SEN, including children with behaviour problems. Some of the reasons provided included children with attention problems finding it difficult to stay focused during the lessons, lack of understanding of language used and lack of engagement with some of the resources. This perceived lack of impact in certain aspects may have also had an effect on overall implementation, since teachers are likely to reduce participation if they have concerns that the programme is of little benefit to their children (Baker et al., 2010).

8.6.5 RQ4 Summary statements

- Teachers' perceptions of the need for the PATHS programme in their particular school was mixed. This was discussed in relation to previous literature which explored the relationship between teachers' attitudes and implementation of a programme.
- Implementation was found to be variable, with teachers reporting many reasons for this. This was discussed in regards to the education context in the UK, with aspects such as academic priorities and teacher autonomy.
- A number of factors which were found to impact on implementation were discussed, in relation to the previous literature.
- Lastly, teachers' perceived benefits of PATHS were discussed with reference to prior literature. Links were made between teachers' perceptions of needs and the subsequent perception of impact. The potential impact on implementation resulting from teachers' perception of benefit was also discussed.

8.7 Integration of RQ4 with quantitative findings

As outlined in the methodology chapter (section 5.2.1) the current study takes a component complementarity design (Caracelli & Greene, 1997), in which one dominant method (i.e. quantitative) is enhanced or elaborated through another method (i.e. qualitative). Each research question was regarded distinctly, however it is also important to understand the convergence between the two strands (Mertens, 2005a). The following section will discuss the confluence of quantitative and qualitative findings, as well as the distinct contribution made by the qualitative strand.

8.7.1 Confluence of quantitative and qualitative findings

The main confluence of quantitative and qualitative findings in the current study focused around implementation variability of the PATHS programme. Both quantitative and qualitative strands confirmed that there was significant variation in the implementation of the programme, in aspects of dosage, fidelity and quality-responsiveness. This is in line with a number of previous studies of which have also reported significant programme implementation variability (Durlak, 1998; Wilson et al., 2003). The qualitative strand examined teachers' attitudes towards the need for PATHS within their context. This may have contributed to the variation in implementation found in the study overall. Baker et al., (2010) found that teachers' attitudes towards a programme can have a significant impact on implementation, which signifies the importance of examining these attitudes. It may be that work must be done initially to allow successful implementation to happen, for example, through shared decision making and outlining clear reasons why a school has decided to adopt a programme.

Furthermore, while the quantitative strand highlighted the variation in implementation, the qualitative strand allowed exploratory data which identified some of the potential reasons for this. Both of these aspects are key to fully understanding the role of implementation in SEL, both practically and in evaluating effectiveness. As noted in Chapter 4, implementation is a neglected area of research, with Durlak et al. (2011) reporting 43% of studies in their meta-analysis failed to monitor implementation. Even rarer are analyses that explore the relationship between implementation and outcome variability (Schoenwald & Garland, 2013). Not including implementation data, or failure to effectively implement a programme is known as a Type III error and can lead to errors in findings (Lendrum & Humphrey, 2012). However, quantitative measures of implementation can only provide so much information, which limits a full understanding

of the “*why, how, and under what conditions*” a programme may be beneficial (Century et al., 2010, p.199). For example, variability in dosage was found in the quantitative analysis. This was further supported in the qualitative strand by teachers’ comments on lack of time in the timetable, and competing priorities, and a general emphasis on the inability to consistently deliver two lessons per week. This is in line with research which has found teachers’ concerns over academic priorities and lack of time in the timetable (Humphrey et al., 2010; Seifer et al., 2010). While it is clearly important to understand how much of a programme must be delivered in order to be effective, it is irrelevant if it is unachievable in a real world setting (e.g. in schools).

Similarly, the qualitative findings suggested that teachers did make adaptations to the programme in order to meet the needs of their context, albeit relatively minor, with most teachers reporting they tried to deliver the programme as intended as much as possible. This is consistent with research which suggests that adaptations are inevitable (Lendrum et al., 2016). Through looking at both the quantitative and qualitative findings, adaptations were made to the programme, but the qualitative data allows understanding of some of the reasons for this. The tentative analysis of fidelity on outcomes for children eligible for FSM suggests that moderate fidelity is associated with higher internalising symptoms. The qualitative findings suggest that there were some cultural transferability issues with some of the content of the programme, and that some of it was considered inaccessible for children from socio-economically disadvantaged backgrounds. Therefore, it may be that adaptations made did not fully address this issue, or changed the programme too much that there was a detrimental impact on outcome gains. This speculation highlights the need to fully connect the *what* and the *why* of implementation.

A further confluence of the quantitative and qualitative findings is around the impact of universal social and emotional learning on children at-risk of poorer outcomes. The results from the quantitative findings suggest that there are no significant differential gains in mental health outcomes for children eligible for FSM after receiving PATHS. The findings also show that being eligible for FSM, and being in the PATHS intervention arm of the trial were associated with significantly higher externalising problems scores. In line with this, the teachers expressed concern that PATHS may not be beneficial for children who already showed signs of mental health problems. Similarly, some teachers indicated that a more intensive intervention strategy may be more beneficial for the particular problems faced by certain children. This is again consistent with prevention research which suggests a more indicative approach may be useful for children who are already

showing signs of mental health problems or a targeted approach for those who are at risk of poorer mental health outcomes (McGorry, 2013).

8.7.2 Unique contribution of qualitative findings

While the main aim of the mixed-methods design in the current study was to provide a complementary and explanatory qualitative strand to further enhance the findings from the quantitative strand, the distinct contribution of the qualitative findings is also useful. As highlighted by Morse (2003) it is important to consider the emergent themes from the qualitative strand as consequential to the overall study and reflect on these independently.

Two such themes emerged and are briefly considered in this section (please see section 8.6 for a more in-depth discussion). Although there were limited differential gains from PATHS seen through the quantitative strand on the outcomes measured, the qualitative strand did allow exploration of some of the other benefits perceived by teachers. This study supported other research undertaken with teachers implementing PATHS that suggested that they perceived the programme to have had a positive impact on the emotional vocabulary and understanding of the children (Curtis & Norgate, 2007; Honess & Hunter, 2014). Furthermore, in the current study, teachers expressed the valued opportunities provided by PATHS to talk to their children and get to know them better. They reported that the PATHS time allowed a more relaxing classroom learning experience, than the usual academic lessons. Teachers reported that they felt this seemed to have a positive impact on teacher-pupil relationships. It is possible this may have had some benefit overall, however, this would be an interesting area for further research.

Another theme that emerged was around generalisation, both in the wider school and via parental involvement. While teachers reported that many children required extra support in which to practically apply some of the strategies they had learned through the PATHS programme (e.g. self-control), generalisation appeared to be weak overall. Generalisation refers to the reinforcement of learning outside of the curricular lessons, and is seen as a key part of the PATHS curriculum (Domitrovich et al., 2010). Teachers noted that opportunities were not taken in order to reinforce strategies out with the classroom, during lunchtimes or when PATHS was not the lesson of focus. Again, this appears to be linked to lack of time and competing priorities within the school. This may have hindered the full benefits of the programme, since children lost some opportunities to practice the skills they were learning through the lessons. Furthermore, as was discussed in section 3.5.2, the association between parental influence and protective factors has been

long suggested. Contextual factors play a significant role in the development of resilience. While parental involvement in SEL programmes, or indeed school based programmes, can be problematic, considering the wider context in order to support generalisation remains important (Greenberg et al., 2001).

8.8 Limitations

Most research, no matter how robust, contains a number of limitations which can constrain the interpretability and scope. Despite the inevitability of limitations, it is important to fully consider them in order to assess their relative importance on the overall findings and analysis of results. Moreover, identifying limitations may also be of use in the consideration of future research. Whilst the present thesis aimed to provide a robust and complete study which addressed the four research questions, a number of limitations remained. The following section therefore aims to outline these limitations and evaluate their significance on the research findings. For clarity, the proceeding section will outline limitations beginning with methodological issues, and then conceptual issues separately.

8.8.1 Methodological issues

Sample selection and representativeness: There are potential limitations to be considered regarding the representativeness of the current sample. During the recruitment phase of the project, schools in the Greater Manchester area were approached about participation in the project. This involved receiving a letter outlining the project, and/or attendance at an information event. Furthermore, the schools were selected from the Greater Manchester area, a predominately urban area with higher levels of socio-economic deprivation associated with greater mental health and behaviour challenges. Therefore, participation in the project was not random, and it could be assumed that schools who agreed to participate in the project were those that had issues with behaviour and/or mental health and may cause sampling bias. However, this may be a minor issue in the current study for a number of reasons. Firstly, the overall sample of $n=45$ schools, and $n=5218$ children, is large enough to provide a diverse sample. In support of this, Table 7 in section 5.5.1 provides a comparison of the schools within the sample compared with the national average. Although, characteristics such as size, proportion of pupils eligible for FSM, proportion of pupils who spoke English as an additional language and proportion of pupils who had a special educational need were slightly higher than the national average, the difference was relatively minor. Furthermore, the use of a randomised controlled trial (RCT) design also decreases sample bias. As discussed in section 5.3.2, RCTs are considered the 'gold standard' for testing if an intervention works, while allowing confidence in minimal sample bias.

With regards analysis of a sub-sample of participants, one limitation is the categorisation of children as either socio-economically disadvantaged via eligibility for FSM. As

discussed in section 1.3.2, measuring SES is challenging, with no definitive measure existing and numerous measures being employed throughout the literature. In order to reduce the impact of this limitation in the current study, research question 1 examined the differences at baseline for these two groups of children. This allowed some confidence that there was a significant difference between the groups, with being eligible for FSM being a significant predictor on poorer outcomes scores for both mental health and academic attainment.

Data collection: The *PATHS to Success* trial was a generously funded trial, with schools who participated being provided a range of otherwise expensive resources, as well as ongoing coaching support to implement the programme, for free. Furthermore, the decision of a school to participate was most often made by the senior leadership of the school. This poses a potential ethical dilemma that teachers felt obliged to participate in the project. However, steps were taken in order to minimise this risk. Firstly, all teachers were reminded on multiple occasions that participation was voluntary, and they could opt out directly through the University of Manchester, rather than having to approach the school senior leadership team. A very small number of teachers opted out of the survey completion, however, the majority of teachers were happy to participate. None of the teachers opted out of the interview strand of data collection, despite being offered the opportunity at the start of the interview, indicating they were happy to participate. A further concern is the accuracy of data provided by the teachers, particularly in the pupil-report strand. One benefit of primary school teacher-report data is that the pupils have a consistent teacher for the whole year of their schooling, meaning the teacher is likely to know the children well.

Additionally, data overload is also a consideration in the current study. Each teacher was required to report on each child in their class, which was approximately 35 pupils for some teachers. This meant that some teachers may have experienced fatigue during completion, leading to inaccuracy. However, in reality, each survey only took approximately five minutes to complete per pupil, so it is unlikely this would have had a detrimental impact on results. Furthermore, the research team supported teachers, where possible, to allow them extra time to complete the surveys. As each research assistant was also a qualified teacher, this meant they could support within classrooms to allow teachers time to undertake surveys, minimising data weariness and enhancing concentration.

A further limitation is the consideration of the conditions in which PATHS was implemented. The present study aimed to examine differential gains in outcomes after implementation of PATHS. However, it is unquestionable that the programme was implemented in advantageous conditions than would normally be available in schools. As schools chose to participate in the project, it is fair to assume they have a vested interest in social and emotional learning, and were therefore more susceptible to programme implementation. Furthermore, the schools were supported via a coaching model throughout the programme, as well as being provided with further resources for free if required. However, as can be seen by the implementation data, there was still a large amount of variability in implementation of the programme, as well as differing teacher attitudes and receptibility, therefore reflecting the overall naturalistic nature of the research.

Sample size: One of the main risks of longitudinal research is attrition. Within the present study the attrition rates were 36% overall for the mental health outcome. This percentage represents the number of participants for whom there was data missing at baseline or post-test for the SDQ. This is a clear limitation of the present study, in that a moderate level of the initial sample was not included within the analysis due to missing data. However, the missing data analysis conducted (see section 6.2.2) revealed that the data was missing at random, and not linked to the outcome measures. Furthermore, the initial sample size was adequately powered to allow generalisability of the findings for RQ2, even with some attrition. Nevertheless, a significant limitation with regards RQ3 is statistical power. The analysis conducted utilised implementation sub-groups, for example low/moderate/high dosage, which was further split by individual eligibility for FSM (only approximately 1/3 of the sample). This resulted in underpowered analysis, and therefore the potential for spurious interaction terms produced has to be considered. However, this analysis is still of benefit, as it highlights a gap in the research base, which the present study begins to explore, examining the impact of implementation variability of differential gains for children at-risk. Still, the findings for RQ3 should be considered tentative at this stage, with a requirement for further similar research to be undertaken with larger pupil and school numbers.

Measurement tools: While the SDQ is regarded a reliable and valid tool, as discussed in section 5.5.1 of the methodology chapter, there are still some considerations which must be taken into account. The version of the SDQ utilised in the current study was the teacher-report version. This poses difficulties with complete accuracy as teachers must

be aware of observable behaviours, particularly with the endogenous nature of certain aspects, such as internalising symptoms. Another potential limitation is the use of the 3-factor categories (externalising, internalising and pro-social), over the 5-factor categories. However, these limitations are minimised by the inclusion of the initial analysis, undertaken with regards RQ1, which significantly highlighted the differences between the children eligible for FSM and non-eligible peers in all outcomes. This clear difference between the groups, in line with the literature base which highlights poorer outcomes for children from low SES backgrounds, supports the use of the SDQ as a robust tool for measuring mental health outcomes. Furthermore, the use of the 3-factor categories is supported by multiple confirmatory factor analysis in a number of studies (Dickey & Blumberg, 2004; Goodman, 2001; Riso et al., 2010).

The inherent flexibility of the semi-structured interviews may also be considered a limitation. However, this approach is seen as a useful tool for exploring the views of a person towards something (Kvale, 1996), the aim of RQ4 in the current study. Additionally, reliability of semi-structured interviews is often criticised. With regards the current study, since often the decision to adopt PATHS was taken by members of the school's SLT, it is possible teachers may have been inclined to provide a favourable response, as a result of social acceptability bias. However, the anonymous nature of the data collection should have gone some way to mitigate this. Furthermore, the data found both positive and negative views of implementing PATHS, highlighting the transparent approach to the interviews taken by the teachers. Finally, the qualitative nature of the data means that generalisation of findings is limited. However, the design of the current study allows for the qualitative findings to be reviewed in conjunction with the quantitative findings.

Analytical considerations: The current study utilised Multilevel Modelling (MLM) as the main strategy for quantitative data analysis, which was chosen as the most appropriate method for analysing the data. This is because MLM takes account of the hierarchical (i.e. children within schools) and clustered (i.e. scores within a given school will be correlated) make-up of the data (Tabachnick & Fidell, 2014). However, as with any analytical approach, the limitations must also be taken into account. As such, consideration of clustering that may occur, but not be accounted for may be an area of criticism. For example, while the analysis considers school level clustering in RQ1 & RQ2, class level clustering, and therefore classroom effects, is not accounted for. However, the decision was taken in order to avoid “overfitting” the models, through inclusion of too many overlapping

parameters (Hawkins, 2004). Furthermore, in regards to RQ1 & RQ2, the variables of interest were at a school and pupil level, therefore it is more appropriate to include these levels within the models. For RQ3, the decision was taken to remove the school level, again to avoid overfitting, and because class level was the focus of the analysis for that particular RQ.

A further consideration in the current study is the use of the MMR approach. As discussed in Chapter 5, a criticism of both qualitative and MMR research is its potential for bias and that it lacks validity and/or reliability, particularly by those who favour a quantitative approach to research (Maxwell & Mittapalli, 2010). However, as is outlined in the methodology section, the qualitative strand in the current study was conducted with as much rigour and scrutiny as the quantitative strand (e.g. rigorous approach to analysis – see Table 16). Furthermore, the use of MMR allowed a more in depth exploration of both the quantitative impact of implementation variability on outcomes, but also the explanatory overview of real-life implementation, in order to understand not only the what, but also the why. While no measure can be considered perfect, the pragmatic approach taken in the current study justifies the use of MMR as the best method in which to answer the research questions. Additionally, the steps outlined and taken to ensure robust analysis at every stage of the study aim to ensure a high level of quality and robustness. While an overall limitation may be the difficulties associated with using approaches from epistemologically opposing stances, the current study took relevant steps in order to achieve a high standard of rigour. Furthermore, the flexibility offered by utilising a MMR approach can also be considered a strength in offering a more in depth strategy to answering the research questions.

Additional variables: A further limitation is that the current study was not fully comprehensive in the assessment of implementation. While the key variables of dosage, fidelity and quality-responsiveness were included, and provide a wide-ranging analysis in comparison to many comparable studies, nevertheless, there are additional components worthy of inclusion. However, it is exceptionally difficult, and far outwith the scope of the present study, to study all implementation components simultaneously (Durlak, 2016). Additional variables will be discussed further in relation to the research context below.

Research context: One of the key constraints on the present study is the fact that the data is drawn from the *PATHS to Success* trial. This resulted in certain restrictions on the variables collected, as already specified by the overall research project. For example, although the use of eligibility for FSM was deemed appropriate and valid in the current

study as a proxy measurement of socio-economic disadvantage, further variables (as discussed in section 1.3.2, such as parental education, income and occupation) may have strengthened the categories of those considered to be from low SES backgrounds. However, while the present study acknowledges that these variables are important, it is out with the scope of the current thesis to include every potential variable. Although the drawbacks of utilising data as part of a large study are important to consider, there are also a number of significant benefits. Firstly, it was advantageous to have access to a much larger dataset than would have been obtainable under normal doctorate circumstances, as well as access to a wide range of contextual variables for inclusion in MLM. A further benefit was the ability to use implementation data from lesson observations, rather than self-report which is the norm for similar research. Self-report implementation data is considered less accurate, due to the propensity for bias as a result of social desirability (Domitrovich et al., 2010). Therefore, while some minor limitations are considered from extracting data from a larger research project, this must be balanced by the significant advantages that also arise.

8.8.2 Conceptual issues

Defining and measuring socio-economic disadvantage: A prominent limitation within the current study is the complexities surrounding definition and measurement of socio-economic disadvantage. As discussed in Chapter 1, SES is one of the most commonly used contextual variables within education research (Sirin, 2005). However, it is notoriously difficult to accurately measure leading to ambiguity in interpreting findings. While utilising FSM as a proxy for socio-economic disadvantage is supported in the literature as an acceptable measure, it is an imperfect binary measure which simplifies the complexities surrounding socio-economic status. One limitation is the implicit assumption taken in the current study, and indeed similar research, that all children who are eligible for FSM are at-risk from poorer outcomes. While the risk remains, there are a number of individual and contextual factors which are associated with at-risk status. Furthermore, there are children who are not eligible for FSM who are also at-risk from poorer outcomes. However, it is infeasible to include every variation and a general category has to be formed in order to undertake analyses. RQ1 aimed to identify if there was a difference between the two groups, inferring risk through poorer scores in all five outcome measures.

A further limitation is the assumption that eligibility for FSM is a fixed and unchanging status. It is quite possible that through the course of the study children categorised as socio-economically disadvantaged, through eligibility for FSM, at baseline moved out of this category. However, this limitation is minimised by the large sample size.

Furthermore, as has been seen in the literature, moving from low SES to high SES is not an immediate remedy for the risk factors associated with socio-economic disadvantage (Costello et al., 2003). The significant differences between the children eligible for FSM and those not eligible reported at baseline with regards RQ1 suggest that, on the whole, these children are experiencing poorer outcomes.

Defining and measuring implementation: As discussed in Chapter 4, implementation is a complex topic, with many issues surrounding definitions and measurement of the aspects of implementation. How implementation is viewed varies significantly across the literature base, particularly with regard to the distinction and overlap of the 8 dimensions of implementation (outlined in section 4.2). For example, some view fidelity as key and a superordinate construct, with the other aspects supporting (e.g. Carroll et al., 2007), therefore emphasising quality in relation to high fidelity. While others adopt the view taken in the present study that fidelity is a subordinate indicator alongside the other aspects (e.g. Durlak & DuPre, 2008). This highlights the variation in interpretation of implementation. Moreover, while some aspects of implementation are fairly easy to measure quantitatively (e.g. dosage through number of lessons delivered), some aspects of implementation are relatively subjective, with one individual's assessment of an aspect differing significantly from another's. For example, one observer's rating of a teacher's enthusiasm (an aspect of quality) may be different from another's. Therefore, a limitation within the current study may be the assessment of some of the more subjective aspects of implementation, e.g. lesson quality. However, this limitation was greatly minimised by the use of a structured pro-forma (Appendix 2) and the rigorous pre-observation inter-rater reliability sessions conducted (see section 5.6.4 for more information).

Furthermore, research conducted within schools can also have certain difficulties, with regard data collection overload. With regards to Research Question 3, the implementation data would have been undoubtedly strengthened by the inclusion of a conflated score from multiple lesson observations. In fact, it is recommended that implementation data be collected over multiple occasions, in order to improve reliability (Humphrey et al., 2016). However, in the current educational climate teachers are constantly observed which can lead to resistance to observations. Therefore, in order to reduce attrition and participant overload, teachers were only observed once per academic year. However, this limitation must be taken into consideration.

8.8.3 Summary statements

While limitations are an unfortunate inevitability of any piece of research, it is important to make sure they are fully considered, particularly with regard to any potential impact on findings. In the present study there were a number of limitations identified which are summarised below.

Methodological limitations

- Sample selection and representativeness was addressed with regards the whole sample and the sub-sample of children eligible for FSM.
- Data collection methods were reflected on, with particular consideration given to data overload and the favourable conditions in which PATHS was implemented.
- Issues of sample size were considered with regards to attrition rates and missing data. Limitations with regards being underpowered for RQ3 analysis were highlighted.
- Issues relating to the measurement tools used in the study were discussed, with particular focus on the use of the SDQ 3-factor categories and limitations regarding the use of semi-structured interviews.
- Limitations relating to the use of multilevel modelling as the main analytical strategy were considered. Additionally, issues relating to the pragmatic mixed methods design of the current study was considered.
- Consideration of additional variables which may have been worthy of inclusion in the current analysis, particularly with regard the range of aspects of implementation.
- Finally, the limitations, in relation to the benefits, associated with drawing data from a wider research project were also discussed.

Conceptual limitations

- Issues associated with the definition and measurement of socio-economic disadvantage were discussed, in relation to the use of eligibility for FSM used in the current study.
- The conceptual issues of defining and measuring implementation were also considered, with regards the differences in the literature base around meaning and definition, and the subjective nature of measuring some aspects of implementation.

8.9 Implications

The following section provides a discussion of the implications of the findings from the current research described in the previous sections. A number of implications have emerged, that are relevant for the research, with regards to differences in mental health and academic outcomes for children from socio-economically disadvantaged backgrounds, school-based prevention research for children at risk, and the importance of implementation variability as a moderator of outcomes. These will be discussed in further detail below.

8.9.1 Socio-economic disadvantage and outcomes

The findings in the present study show that eligibility for FSM is a predictor for poorer mental health and academic outcomes. While there have been previous criticisms of the use of eligibility for FSM, it remains a commonly used proxy for socio-economic disadvantage (see section 1.3.2 for a full discussion). In the current study, eligibility for FSM predicted poorer scores on all five outcomes measured, indicating a clear distinction between outcomes for those eligible for FSM and those not eligible. This finding contributes to previous research which has deemed FSM to be a useful and powerful indicator of economic disadvantage (Gorard, 2012). There are key advantages to utilising eligibility for FSM as an indicator of socio-economic disadvantage for both research and policy. It is routinely and officially collected for nearly every pupil in the UK and is a relatively simple binary definition for use in analyses. While the limitations of FSM must be considered (particularly in relation to the simplistic division of the population into two groups - see section 8.8.2), it can be considered a useful tool in identifying those at risk of poorer outcomes.

The present study adds to previous findings which suggests a relationship between children from socio-economically disadvantaged backgrounds and poorer mental health (Bradley & Corwyn, 2002; Green et al., 2005; Reiss, 2013). This is significant in that it contributes to the overall picture of child and adolescent mental health in the UK. In recent years there has been a growing policy focus on children's mental health, with an abundance of studies reporting a link between social and economic adversity and increased risk of developing mental health problems (Frith, 2016). Figures show that children and young people from the poorest households are three times more likely to have a mental health problem than those from more affluent homes (Annual Report of the Chief Medical Officer, 2013). The negative consequences of externalising problems and internalising symptoms in children and young people can be great. Evidence suggests

that children who show emergent externalising behaviour problems are likely to develop serious behaviour and mental health problems as they grow up (Laird et al., 2001; Stormont, 2002). Similarly, life course outcomes research involving young people with anxiety disorders in adolescence found they were at increased risk of subsequent anxiety, depression, drug addiction and educational underachievement (Woodward & Fergusson, 2001). The short and long-term impacts of mental health problems in childhood are wide ranging and can be serious and life-limiting (Frith, 2016). Furthermore, over half of all mental health problems starts before the age of fourteen years, with 75% developing by age eighteen years (Murphy & Fonagy, 2012). Therefore, the area of child and adolescent mental health of critical importance, both in understanding cause and in progressing solutions.

Additionally, the current study contributes to previous research which suggests that children from low SES backgrounds are at increased risk of poorer academic outcomes. For both English and mathematics outcomes, the findings in the current study found eligibility for FSM to be a predictor of lower scores. Approximately 20% of all children leave primary school without achieving the expected levels in English and mathematics, with approximately 40% of children eligible for FSM failing to reach the expected levels in these subjects (Department for Education, 2011, 2012). In the current study teachers reported a focus on academic attainment in the curriculum, with academic learning taking precedence over everything else. Even with this emphasis, there is still a significant gap in academic attainment between children from low and high SES backgrounds. This has key implications for the current education system with regards addressing educational inequality. Low attainment has detrimental consequences on a range of outcomes, and has also been seen to contribute to mental health problems (Dodge & Pettit, 2003; Schwartz et al., 2008)

Increased understanding of the risk associated with socio-economic disadvantage highlights the need for further research, in order to challenge this substantial issue. A recent report from the Millennium Cohort Study identified the need for policy makers to consider the relationship between poor mental health and children's wider circumstances. The report notes a particular focus on children from low socio-economic backgrounds, since a relationship was also found between low family income and mental health problems (UCL Institute of Education, 2017). The current findings add to the evidence that the effects on mental health as a result of socio-economic disadvantage is a significant area for wider consideration. Development of effective prevention and support, in order to offset the negative effects of risk, is therefore imperative.

8.9.2 Preventative school-based intervention for children at-risk

From the literature base and current study's findings, it is clear that socio-economic disadvantage is a risk factor, and there is a need to develop protective factors in order to minimise the effect on a range of outcomes. However, more research into how this may be done is required. While the evidence base around SEL seems promising, the current study provides a cautionary message with regards universal SEL for children at-risk of poorer outcomes. The findings show that overall there were no differential gains in mental health or academic outcomes for children from low socio-economic backgrounds after undertaking PATHS. This was in contrast to the solid and growing empirical base indicating that well-designed and well-implemented school-based prevention can have a positive effect on a range of social, health and academic outcomes (Greenberg et al., 2003). However, most previous studies have tended to take an intention-to-treat approach, and there is a wide gap in the research base examining effects specifically for children from low socio-economic backgrounds, which the current study aimed to address. It is particularly important that interventions benefit those children most in need, and it may be that children from low socio-economic backgrounds require a different, or more intensive intervention, in order to reduce the negative effects on outcomes as a consequence of growing up in adversity. As discussed in Chapter 1, the risk factors associated with low socio-economic status can be significant. It is not necessarily socio-economic status which impacts on outcomes, but the associated proximal risk factors such as family structure, parenting behaviours/quality, access to resources and neighbourhood and community influences (Yates et al., 2003).

An implication of the current study may be that universal prevention alone is not enough to buffer the effects of adversity associated with low socio-economic status. In fact, a criticism of the universal intervention is that the low intensity and duration approach may not be sufficient to impact outcomes for those at-risk (Greenberg, 2010). Universal intervention aims to deliver to an entire population - in the case of the present study, school children - based on evidence that it is likely to be of benefit to all. Prevention is better than cure, but with regards mental health there are a range of challenges. The feasibility of universal prevention with whole populations has been criticised due to low malleability of specific risk factors and issues with power (Cuijpers, 2003). Universal prevention differs significantly from selective or targeted interventions, which are more reactive and aimed at "individuals whose risk of becoming ill is above average" and indicated interventions which are aimed for individuals found to "manifest a risk factor, condition, or abnormality that identifies them, individually, as being high risk for future

development of a disease” (Mrazek & Haggerty, 1994, p.21). Moreover, selective/targeted and indicated approaches have been seen to be more beneficial at remediating or halting the development of existing problems for at-risk groups (McGorry, 2013). As seen in the current study, the significant difference in all outcomes between children eligible for FSM and those not eligible may indicate that they better fit the description and focus of selective/targeted or indicated provision, in order to provide a more tailored and/or intensive intervention for specific needs. In this regard, even with optimal implementation, it would be a large feat for a universal intervention, given the low intensity approach, to have a significant impact on outcomes. Additionally, the current findings showed that undertaking PATHS and being eligible for FSM predicted *higher* externalising problems at follow up. This is a finding that must be considered carefully due to the potential implications. While universal interventions are generally considered to be of some benefit to all, some critics suggest that for children at-risk universal intervention may inadvertently exacerbate social inequalities by providing greater benefits to high SES populations (Frohlich & Potvin, 2008). A recent study of PATHS found effects only for children who were not at risk at baseline; for children in the high-risk category, no effect of PATHS was reported (Novak et al., 2017). In light of this, a key implication of the current study may be consideration of whether universal intervention alone is beneficial for children at-risk of mental health problems.

In light of this, a further key implication from the current study is the importance of early prevention. As a universal intervention, PATHS aims to enhance the emotional and behavioural function of the general population, resulting in the promotion of good mental health and well-being and reduce the potential for negative outcomes associated with mental health problems. Early intervention can positively change the mental health trajectories for youth at risk of mental illness (Fazel, 2015). As shown by the analysis from RQ1, there was already a significant difference between the children eligible for FSM and their non-eligible peers across all outcomes. This may suggest that mental health problems had already begun in the sample eligible for FSM, before the participant schools started implementing PATHS. Ideally, early intervention would prevent the onset of child and adolescent mental health difficulties (Kieling et al., 2011). The age of participants in current study was 7-9 years at the outset. This may have been of particular relevance for children from low socio-economic backgrounds, meaning many years of adversity and accumulation of effects of associated risk factors. Moreover, neurocognitive research suggests that preventive interventions are enhanced if undertaken during peak development (approximately between 5 – 7 years), particularly with regards self-regulation

(Greenberg et al., 2004; Riggs & Greenberg, 2004). Therefore, for the children from low socio-economic backgrounds in the current study, the combination of sustained exposure to adversity, plus being older than the age of peak development, prevention may not have been delivered early enough.

Furthermore, as discussed in Chapter 2, the third wave of resiliency research has focused on translating previous work on resilience into developing theory-based interventions. The present study takes a variable-focused approach to exploring interactions between children who are socio-economically disadvantaged, the potential effect of SEL in enhancing resilience, and the impact on outcomes of mental health and academic attainment. The focus of the present study was to identify whether an SEL intervention, which aims to develop protective factors, could buffer the risk factors associated with growing up in socio-economic disadvantage to improve outcomes. It may be that this blanket approach is too simplistic to produce significant positive gains for children from low SES backgrounds. Person-focused approaches profile resilient individuals who have thrived despite adversity, using set criteria within or across time in order to identify the factors which make them resilient, when compared to another group who have not faced risk, or who have experienced risk and have not fared as well (Masten, 2001). As already highlighted, socio-economic disadvantage is a complex construct that covers a whole range of issues. Often socio-economic disadvantage is a correlate of multiple risk factors that together can lead to poor outcomes (Yates et al., 2003). An implication of the current study is the need to more fully understand the complexities of socio-economic disadvantage, including the protective resources which specifically mitigate key risk factors. It is possible that more focus is required on developing certain protective factors more than others in order to buffer the effects of adversity; however, more research in this area is required.

8.9.3 The importance of implementation variability as a moderator of outcomes

Although the findings from RQ2 did not show positive differential gains for children from socio-economic backgrounds after undertaking PATHS, it cannot be taken for granted that implementation was optimal across participating classes/schools. As highlighted in Chapter 4, implementation variability can have a significant effect on outcomes, therefore RQ3 aimed to provide exploratory analysis examining the relationship between implementation variability and outcomes for children eligible for FSM. While government reports suggest that the education system has a front line role in children's mental health and well-being (e.g. Education and Health Committees, 2017),

this is at odds with research, including the current study, which suggests schools are under pressure to complete academic learning, with little time left for much else. The reality is that schools today face struggle to meet the many demands they face (Adelman & Taylor, 2000). Moreover, the practicalities of optimal implementation of school-based interventions are challenging. Research which examines the relations between implementation variability and outcomes is crucial in understanding what can be considered acceptable in achieving positive outcomes.

Although variations in implementation did not always support the previous literature base, the current findings highlighted some differences in outcomes based on implementation levels. Furthermore, as identified in the current study, variability in implementation is inevitable in the real-world school context. Much of the literature base examining the effectiveness of PATHS, or indeed other universal SEL programmes, fails to include implementation-outcome analyses. This is major flaw can weaken outcomes, leading to faulty conclusions about intervention effectiveness (Breitenstein et al., 2010). The implications of the current study are considered below with regards the core dimensions of implementation that were the focus of the current study.

Dosage

A key challenge of implementing evidence-based programmes relates to dosage. Dosage refers to how much of an original programme has been delivered, with programme developers often suggesting that all of a programme should be undertaken in order to achieve optimal results. However, previous research on this has been mixed, with some finding higher dosage of an intervention is associated with better results on outcomes (e.g. Reyes, Brackett, Rivers, Elbertson, & Salovey, 2012), while others have found higher dosage to have little or no positive impact on outcomes (Domitrovich et al., 2010). The current study's findings failed to find a relationship between dosage and mental health outcomes for children eligible for FSM. The lack of association between dosage and mental health outcomes may highlight the importance of other factors, other than just the amount of the intervention lessons delivered, for children from low SES backgrounds. Thus, it is crucial to contemplate the implication that the PATHS programme alone may not have improved mental health outcomes for children eligible for FSM.

However, it is also important to consider the complex nature of dosage of a school-based intervention. Dosage was highlighted in the qualitative findings as a significant issue. Most teachers reported difficulties in finding the time to deliver the programme as

required, for a variety of reasons including competing priorities, a full timetable and an emphasis on academic learning over SEL. RQ2 showed that PATHS did not have significant benefits for children eligible for FSM, which may have been a reflection of the difficulties described by the teachers in the qualitative findings in delivering the whole programme. While the quantitative analysis showed variation in the number of lessons delivered as part of the programme, the qualitative data also suggested issues with overall implementation, with regards generalisation of learning through whole school and home engagement. This may also have contributed to the failure to find an association between dosage and mental health outcomes for children eligible for FSM. In light of this, it is also important to consider feasibility of dosage of an intervention. The current study showed that even though teachers may have felt it was important to deliver social and emotional learning, other pressures often meant that programme dosage and generalisation of the programme out with the classroom suffered. This is a key implication for school-based interventions. There must be a balance between how much of a programme is needed in order to produce positive gains on outcomes, with the realistic practicalities of the demands of a school setting.

A related implication of the current findings regards sustained implementation. While some teachers appeared to start well with regards implementation dosage, this appeared to decrease throughout the year, for a variety of reasons. Other priorities within the school were reported by teachers in the qualitative strand as a major factor, as well as pressure to undertake academic learning firstly. SEL was not regarded as important as academic subjects, which seemed to relate to school league tables and focus on areas that teachers are assessed on (i.e. how many children gain good grades in core subjects). This may indicate policy changes which are needed in order to integrate focus on skills which develop resilience as well as academic attainment. The findings from the current study suggest that high dosage of PATHS may have had a positive effect on mathematics scores for pupils eligible for FSM. This was discussed in relation to the specific content of the Year 6 programme which may have been beneficial for academic learning. It may be that programmes which combine both SEL and academic learning skills could be both useful, and well-received by schools. Another factor for the reduction in dosage over time may relate to the perceived lack of impact that PATHS had. This is a concern for programme developers given that benefits of a programme may take time to be observed. Overall it is apparent that there are a range of factors that can influence dosage of school-based interventions, which must be given consideration in order to ensure effective implementation. Domitrovich et al. (2017) suggest it is key for effective implementation

that schools are provided with the necessary resources needed to adopt and sustain interventions.

Fidelity

There are also implications with regards programme fidelity. As discussed in Chapter 4, fidelity is a complex issue, in which there is an ongoing debate. One side suggests a programme must be delivered exactly as intended in order to produce optimum outcomes, while the other proposes that minor adaptations are, not only an inevitability, but a requirement in order to meet the needs of a diverse range of pupils. Moreover, the reality of programme fidelity must be examined in the context of current educational practice which promotes autonomy and professional identity of teachers (Lendrum et al., 2016). One implication of the current study is that programme fidelity did seem to be inevitable, with variability seen in the quantitative strand, and supported by comments in the qualitative strand. Many teachers reported that they had made adaptations to the programme, although these were mostly considered minor. This has implications for programme developers with regards integrating ways to support, guide and monitor adaptations to programmes. While adaptations may be inevitable and/or necessary, it is crucial to consider ways that adaptations can be made in order to maintain the benefits of a programme.

Additionally, the findings from RQ3 suggest that moderate fidelity of PATHS (compared to low) predicted higher internalising symptoms for children eligible for FSM. In the qualitative strand, teachers suggested that, at times, PATHS was not always accessible for children from low SES backgrounds. Furthermore, issues of cultural transferability were also highlighted by the teachers. This may further highlight the need for programme developers to accommodate adaptations which are necessary in order to ensure relevance for diverse school populations. This has also been suggested by previous studies examining cultural adaptations of preventative interventions (Castro, Barrera, & Martinez, 2004).

Quality/participant responsiveness

As has been discussed, and can be seen from the observation data used in the current study, implementation varied significantly in the current study. Implementation, however, is notoriously difficult to accurately measure (Durlak, 2015). Quality is often used interchangeably with fidelity in the literature base, due to the view of some that any changes to a programme reduce the potential for improved outcomes, and therefore

quality. Moreover, a key difference between the current study and some previous literature was the conceptualisation and measurement of quality (e.g. Kam, Greenberg & Walls, 2003). Therefore, one implication from this is the requirement for a clear and consistent definition of implementation dimensions, in particular quality. A consistent approach would increase the ability to fully understand the impact of the various aspects of implementation variability on outcomes. This is particularly significant when examining programme implementation as a moderator on outcomes for children from low SES backgrounds. The findings of the current study suggest the association between implementation variability and outcomes may differ for children eligible for FSM. However, there was difficulty in relating to previous literature base due to the interweaving of the dimensions, particularly fidelity and quality.

8.9.4 Summary statements

Given the poor life trajectories often associated with growing up in socio-economic adversity, understanding how to enhance resilience through school-based preventative interventions is important. The present study highlights a number of implications for researchers, policy-makers, programme developers and schools, which aim to progress knowledge in this area.

- Increased understanding and awareness of the relationship between poor mental health and socio-economic disadvantage was highlighted, particularly given the associated negative life trajectories.
- An increased understanding of preventative interventions for children from low socio-economic backgrounds is required. Further research into what works for this group of children is needed.
- A focus on early intervention is required for children from low SES backgrounds, in order to positively change mental health and academic trajectories.
- Consideration that variable-focused approaches to translating resilience research into development of theory-based interventions may be too blanket an approach for children from low socio-economic backgrounds. Given the complexities, examination of person-focused approaches may be more useful.
- If school based interventions have any chance of being implemented successfully, then policymakers and government must examine where it fits in to the national curriculum.
- School-based intervention implementation variability appears to be inevitable. Research which examines the effectiveness of these interventions for children eligible for FSM must ensure inclusion of implementation data as part of the analysis.
- Programme developers should must consider ways to accommodate the implementation variability, guided by research which identifies aspects that are associated with positive gains in outcomes.
- Consideration must be given to the pressures faced by schools to meet all the demands placed on them. Adequate training, consultation with teachers, as well as provision of time and resources must be included as part of implementation of evidence-based programmes.
- A further understanding and development of consistent definitions and measurements of implementation is required in order to be able to synthesise research.

8.10 Areas for future research

Within the current study a number of areas for future research have been highlighted. For ease of interpretation these have been separated into key areas below.

8.10.1 Links between mental health and academic attainment

While not empirically tested, the findings from RQ1 may also support the developmental cascades theory which connects the effects between two separate domains, in this case mental health and academic achievement. As discussed in Chapter 1 previous research has found significant correlations between social and emotional well-being and academic achievement (Gutman & Vorhaus, 2012; Schwartz, Gorman, Duong, & Nakamoto, 2008). This relationship has also been seen to be bidirectional: poorer mental health may impact on academic achievement, but equally poor academic achievement may impact on a child's mental health, resulting in poorer outcomes in both domains. Children with externalising behaviour issues, such as hyperactivity, impulsiveness and attention issues, may miss key learning in the classroom due to these behaviours (Caldas & Bankston, 1997; Deater-Deckard, 2001). Similarly, children with internalising symptoms may be at risk of reduced cognitive functioning, or reduced attention impeding participation and focus in learning (Moilanen, Shaw, & Maxwell, 2010). Additionally, a co-morbid effect between the two has been noted in the literature. For example, externalising behavioural problems can undermine academic achievement, which in turn can impact negatively on internalising problems (Masten et al., 2005). Likewise, internalising problems which lead to reduced academic achievement may lead to circumstances such as extra support or being retained which may lead to externalising problems in response (Dodge & Pettit, 2003). While these effects have been theorised, more research to determine the developmental cascades impact on both mental health outcomes and academic attainment would enhance understanding of this area.

While associations between pro-social behaviour and academic achievement have also been reported in the literature, this is sparse. Early pro-social behaviour has been found to strongly predict subsequent levels of academic achievement (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000). Pro-social behaviour is a multi-faceted construct, therefore, it is likely the components within it contribute to the positive effect on academic achievement. For example, pro-social behaviour is associated with being sociable and assertive, social competence and problem-solving skills, high self-esteem and status with peers (Eisenberg & Fabes, 1995). However, again, an understanding of the

mechanisms through which mental health outcomes impact on academic attainment, and vice versa, is a gap in the research. As was identified through the qualitative data, schools have limited resources to address all areas of social and emotional development and cognitive development, and are experiencing intense pressures to enhance academic performance (Durlak et al., 2011). This, perhaps, suggests an increased understanding is needed of how these two aspects may be connected. Further research into the processes through which one aspect may impact on the other would allow development of programmes and intervention which support the improvement of both outcomes.

8.10.2 Preventative intervention for children at risk

The key finding from RQ1 is that in all 5 outcomes measured there are significant differences between children eligible for FSM and their non-eligible peers. This finding contributes to a wide literature base which has found socio-economic disadvantage is a risk factor for a wide range of poorer outcomes (Perna et al., 2010; Reiss, 2013; Sirin, 2005). Research into deprivation in the UK has estimated that 33% of the population suffers significant socio-economic disadvantage, with approximately a quarter experiencing an unacceptably low standard of living. It is clear that socio-economic disadvantage is a significant problem, with short and long term impact on individuals and families. Therefore, it is important that more research is undertaken in order to examine what can be done to minimise the effects of this risk factor. Key to developing protective factors is the understanding of the underlying mechanisms of risk. Previous research has hypothesised a number of reasons why children from socio-economically disadvantaged backgrounds fare worse in outcomes. For example, theories such as the social selection model (Peterlin & Scher, 2013), social causation model (Dohrenwend, 1966), family investment model (Kiernan & Huerta, 2008) and family stress model (Elder & Caspi, 1988) go some way towards explaining the association between socio-economic disadvantage and poorer outcomes, but much more research is required to gain a fuller understanding. Future research should include regular follow-up investigations as longitudinal studies provide information about causal relationships between socio-economic disparities and outcomes over the life course (Reiss, 2013). Furthermore, as discussed in Chapter 1 there are complexities surrounding the measurement of SES. The current study, as with much of the previous literature base focuses on household income as a measure of socio-economic status. However, there is an increasing acknowledgment of the need for a multi-dimensional approach to measuring and defining socio-economic status (e.g. Bradshaw & Holmes, 2010). Future research which explores other dimensions

– such as subjective experiences of socio-economic disadvantage or lack of material resources – would be beneficial in developing understanding of the associated risk.

Additionally, while a number of evidence-based SEL programmes exist, there is a lack of robust research examining the benefits for children from low socio-economic background specifically. Taylor et al. (2017) note that a limitation of their recent meta-analysis was the lack of data included in studies regarding socio-economic status. They highlight the need for further research in this area in order to assess whether children from different socio-economic backgrounds respond differently to preventative interventions. While the current study's findings suggest that the association between undertaking PATHS and outcomes may be different for children eligible for FSM compared with their non-eligible peers, much more research in this area is needed. Additional research would be beneficial to discern the active ingredients of interventions so that they can be tailored to the needs of specific groups of children and different schools (Domitrovich, Durlak, Staley, & Weissberg, 2017). In contrast to previous research citing the benefits of SEL interventions, the current research found that being eligible for FSM and undertaking PATHS predicted higher externalising problems. While it is unclear exactly why this may be, discussion around different types of preventative intervention were included in relation to the findings. Prior research has suggested that selective prevention, whereby risk factors are targeted within high-risk subgroups, may be more beneficial (McGorry, 2013). Therefore, targeted or indicated interventions may be more favourable for children from socio-economically disadvantaged backgrounds. Similarly, it may be that universal intervention may be more advantageous when delivered alongside targeted or indicated approaches. Prior research has supported this approach by examining the effects of a multicomponent preventative intervention for children at risk of long-term antisocial behaviour (e.g. Conduct Problems Prevention Research Group, 1999a). However, much more research is needed, with a particular focus on children from socio-economically disadvantaged backgrounds. While a combined approach including universal, targeted and indicated interventions may be useful in addressing a range of problems, research which examines how these different approaches interact with each other is scarce (Humphrey, 2013). Useful research could examine specific differential gains among children from low socio-economic status backgrounds when exposed to multicomponent approaches.

Similarly, further research in identifying specific protective factors which are associated with improved outcomes for individuals at-risk as a result of socio-economic disadvantage

would be advantageous. Further research, which takes a person-centred approach to resilience research, may undertake a comparison of two groups from the same risk sample: one group that demonstrates poor outcomes and the other that demonstrates positive outcomes. This would be particularly interesting with a focus on youth who are high risk and high competence compared with youth who are high risk and low competence, in order to identify factors which might protect against risk. Moreover, further comparisons with low risk and high competence groups allow exploration of whether the positive adaptation is similar to those children classified as resilient (Luthar, 2006). Future research would be beneficial by adopting a person-focused approach with a sample of individuals from socio-economically disadvantaged backgrounds, to identify the risk factors, as well as trajectories in order to map the protective factors which buffer the effects of adversity. This would allow development of preventative interventions which address specific risk factors.

8.10.3 Defining and measuring implementation

The importance of implementation in assessing the full relationship between evidence-based programmes and outcomes has received substantially more attention in educational research over recent years. However, there is still a long way to go in order to enhance the full understanding of implementation in school-based intervention research. As discussed throughout the thesis, consistent definitions of the dimensions of implementation are needed, as well as the development of tools which standardise the measurement of implementation processes and outcomes (Fixsen & Ogden, 2014). Some of the conceptual challenges within implementation were discussed in Chapter 4, and with reference to the findings of the current study in this chapter. One barrier to an understanding of how implementation processes may be improved is the inability to fully synthesise findings of prior implementation research. This is due, in part, to the different definitions used throughout the literature base. For example, the overlap of quality and fidelity seen frequently (e.g. Domitrovich & Greenberg, 2000). Although there has been some attempt to provide standardised definitions of the eight dimensions of implementation (e.g. Durlak & DuPre, 2008; Hansen et al., 2013) there is still a long way to go for consistency, and more research in this area is required for progress to be made.

A further issue regards the reasons for implementation variability, and the inclusion of relevant data which accounts for this. For example, the initial adoption and reasons why a school may take on an evidence-based programme have been seen to influence the subsequent implementation (Baker et al., 2010). Additionally, issues around competing

priorities within schools were also raised in the qualitative strand of the current study. Teachers noted that academic pressures which meant that they could not dedicate as much time and effort to SEL as they would have liked, or that sustained implementation as outlined by the programme developers. Academic priorities taking precedence in the UK curriculum has also been noted in other research (Humphrey et al., 2010). The academic pressures faced by schools within the UK may be of detrimental consequence to holistic learning and skill development needed in order to build protective factors which buffer the effects of adversity. Some previous research has begun to examine teacher factors that influence implementation (e.g. Ransford, Greenberg, Domitrovich, Small, & Jacobson, 2009), however, much more research is required in this area. Future research should examine fully the factors which affect implementation of school-based interventions, specifically in relation to outcomes.

8.10.4 Implementation variability and differential gains

As outlined in the limitations section, the findings of RQ3 in the current study must be considered cautiously, due to the analysis being underpowered. However, the exploratory analysis suggests that implementation variability is related to outcomes for children eligible for FSM. This emphasises the need for more relational analyses which examines the association between implementation variability and outcomes. As highlighted previously, this type of analysis is very rare – in their review, Schoenwald and Garland (2013) note only 10% of studies report implementation-outcomes analyses. Furthermore, there is no previous specific research examining implementation variability on differential gains for children from low socio-economic backgrounds (or, indeed, any other subgroup). The findings in the current study also tentatively suggest that outcomes in relation to implementation variability might differ for children eligible for FSM and their non-eligible peers. Therefore, if implementation variability of an intervention does affect outcomes for diverse populations, then more understanding of the processes underpinning such effects are required. As discussed in the limitations section, the sample size utilised for RQ3 in the current study was not large enough to draw firm conclusions. Therefore, further research utilising a much larger sample of schools, classes and children, including those eligible for FSM, in order to corroborate the current study, would allow confirmation of the generalisability of the findings.

8.10.5 Summary statements

A number of areas for additional and future research were discussed in relation to the findings presented in the current study. The following areas were identified:

- Further examination of the relationship between mental health outcomes and academic attainment
- Exploration of the differential gains of a range of preventative interventions for children from low socio-economic backgrounds, in order to make progress in the most effective approach to minimise the effects of associated risk.
- Research which takes a person-centred approach to identify key features which buffer the effects of socio-economic adversity, which may inform future development of preventive interventions.
- Further research into the development of standardised dimensions of implementation and tighter definitions, in order to improve consistency and generalisability of implementation research.
- Additional research examining relational analyses of implementation variability and outcomes for children from low socio-economic backgrounds, utilising a much larger sample than the current study.

8.11 Original contribution to knowledge

The present study provides a unique and distinctive contribution to knowledge, advancing the evidence base surrounding risk and resilience for children from socio-economically disadvantaged backgrounds, as well as the importance of implementation variability as a moderator of intervention outcomes. It is the aim of all doctoral theses to provide an original contribution to knowledge, so the intention of this section is to demonstrate this in relation to the rationale presented in the literature review.

First, the current study contributes to the limited research which examines the effects of universal SEL for children from low socio-economic backgrounds. A very recent meta-analysis by Taylor et al. (2017), examining the follow up effects of school-based SEL interventions, highlighted the stark lack of socio-economic demographic data included within the research. Within the studies they included, only a third (26 of 82) reported the percentage of students in poverty - although these studies did not actually conduct subgroup analysis - with no socio-economic demographic data reported in the other studies. They emphasise the importance of future research in reporting subgroup analysis, in order to assess if pupils from diverse socio-economic backgrounds respond differently to interventions on a variety of outcomes. A major contribution to knowledge with the present study was its focus on examining the effects of the PATHS intervention specifically for children from low-socio economic backgrounds, compared with their more affluent peers. While there are limitations with the use of eligibility for FSM (as discussed in the limitations section), this relatively simple binary approach allowed for a comparison between children from low and high SES backgrounds. No previous study has specifically explored the differential gains of PATHS for children eligible for FSM.

Moreover, the current study addresses a gap in the literature examining differential gains of a universal SEL intervention for children from low SES backgrounds, for both mental health and academic outcomes simultaneously. Research on the impact of PATHS on academic outcomes is very rare, with only 2 previous studies in the literature, neither of which explored gains for children from low SES backgrounds specifically. As outlined by the PATHS logic model (section 3.3.2) one of the aims of PATHS is to support academic gain through development of proximal outcomes, such as improved social and emotional competence, and contextual factors, such as improved school and learning engagement (Casel, 2007). Since children from low SES backgrounds are at increased risk of poorer academic outcomes, research that explores ways to potentially improve

attainment is of crucial importance. Furthermore, through examining mental health and academic outcomes simultaneously, a detailed representation of the effects of PATHS for children from socio-economically disadvantaged backgrounds can be made.

As well as contributing to a critical gap in the literature regarding differential gains for children eligible for FSM undertaking PATHS, the current study adds a major contribution to knowledge through the examination of the association between implementation variability and outcomes for this underrepresented population. The present study is the first study to include analysis exploring the relationship between implementation and outcomes for children from low socio-economic backgrounds. As detailed in Chapter 4, the way a programme is implemented can moderate the effect of expected outcomes. Additionally, a failure to include implementation data does not allow a full understanding of how a programme has been delivered, or allow researchers to move from knowing if a programme works to the why, how and under what conditions. By including analysis examining implementation variability on outcomes for children from socio-economically disadvantaged backgrounds further understanding can be gained about what works (and how) for this specific group.

The best way to accurately measure implementation has yet to be determined, with a range of methods used within the literature. Implementation studies to date typically rely on journal logs or other self-rating methods by those delivering the intervention, and less often, direct observations or evaluations by trainers or coaches (Durlak, 2016; Dusenbury et al., 2005). As has been previously discussed, self-report data has been found to reflect better levels of implementation when used in combination with other sources, highlighting potential bias with this method (Hansen et al., 2013). The current study has contributed to methodological advancements in measuring implementation through the development and use of the PATHS observation proforma (Appendix 2). This is a bespoke observation schedule, which draws on a number of sources, including previous research, expertise advice, implementation frameworks and the literature base, in order to provide a comprehensive measure of implementation. Although there are limitations with the use of observational data in the current study (as noted in section 8.8.1), there are significant gains with regards a more accurate representation of implementation. The current study is among the first to utilise this observational measurement as part of the analysis undertaken.

Furthermore, the use of the qualitative strand allowed insight of implementation of PATHS through the first hand experiences of the teachers who implemented the

programme. The use of teacher voice added an additional layer to the understanding of the practicalities of implementation, with convergence with the quantitative data allowing conclusions to be drawn about real-life school-based implementation. The use of a mixed methods approach in this regard is unique and original in contributing to further understanding the variability of implementation, and the practicalities of school-based intervention alongside statistical analysis examining implementation variability as a moderator of outcomes. Implementation of an intervention is complex, particularly within real-world scenarios in which other practicalities may interfere with implementation protocol. Use of implementer experiences to identify practical issues with school-based intervention, for example time, consultation process before adopting a programme, and understanding of SEL's role in school alongside academic pressures, has allowed an enriched understanding of some the practicalities of implementation. This allowed the present study to make a contribution to knowledge, with regards providing depth to the understanding of implementation to incorporate potential barriers and challenges to implementation. Very rarely are teachers' perspectives and experiences captured in research, yet this data allows an increase in knowledge of the implementation process.

The current study is also one of the first to use the three-factor solution of SDQ domains, separating externalising, internalising and pro-social behaviour, in examining the relationship between undertaking PATHS and outcomes. Previous studies examining an intention-to-treat effect of PATHS have utilised the five-factor solution of the SDQ (e.g. Berry et al., 2015). However, the five-factor solution has not always been found to be the best fit for data, particularly in general population samples (Dickey & Blumberg, 2004). There is a lack of previous research that compares the influence of SES on different domains of mental health problems simultaneously in the same sample (Bøe et al., 2012). The use of the three-factor solution allows the effect of PATHS on different mental health domains to be examined for children from socio-economically disadvantaged backgrounds. Moreover, examining internalising symptoms as an outcome has lagged behind in the research, compared with externalising problems. This may be because internalising symptoms are not considered as problematic, due to being intro-punitive and less overtly disruptive than externalising behaviours. Similarly, prior studies have often focused on improving problem behaviours, whereas the current study included pro-social behaviour in order to provide a more balanced view of the potential impacts on mental health.

A further contribution made by the qualitative strand in the current study was in identifying some of the perceived benefits of undertaking the PATHS curriculum. While these were not always associated with the primary outcomes measured, they provided insight into some of the potential advantages of PATHS that may require further examination. For example, many of the teachers highlighted the benefits of the programme in providing opportunities to get to know their pupils further and developing teacher-pupil relationships. While this was not the primary focus of the study, it highlights areas for future research.

8.11.1 Summary Statements

One of the key aims of the PhD thesis was to make an original contribution to knowledge in the field of preventative intervention research, with a particular focus on differential gains for children from socio-economically disadvantaged backgrounds. The following points summarise this contribution.

- Focusing specifically on the effects on mental health and academic outcomes of a universal SEL intervention for children from low socio-economic backgrounds, contributing to the sparse existing literature base on differential gains for low SES children.
- Examining the relationship between undertaking PATHS and both mental health and academic outcomes for children from low socio-economic backgrounds in the same sample, furthering knowledge on the effects of PATHS on outcomes.
- Undertaking exploratory analysis examining the association between implementation and outcomes for children from low socio-economic backgrounds, providing a unique contribution and filling a gap in the literature.
- Use of bespoke observation schedule utilising independent observer data within analysis, promoting methodological development within the field of implementation.
- Use of mixed methods approach allowing a unique contribution to the real life practicalities of school-based implementation.
- Use of SDQ three-factor solution in order to examine the effects of PATHS on different domains of mental health for children from socio-economically disadvantaged backgrounds, expanding knowledge in this area.
- Identified gaps in the literature base which are beneficial for the progress of school-based intervention research.

8.12 Conclusion

8.12.1 Summary of the study

The aim of this study was to investigate differential gains, in mental health and academic outcomes, after two years of exposure to PATHS, for children eligible for FSM. A further aim was to examine the association between implementation variability (dosage, fidelity and quality) and outcomes for children eligible for FSM. A mixed methods design was used, with the intention of examining differential gains through statistical modelling, and analysis of qualitative semi-structured interviews providing complementary and explanatory data.

The data for the current study were derived from the University of Manchester's *PATHS to Success* trial, which 45 primary schools and 5218 pupils in the Greater Manchester area participated. Four research questions were developed in order to answer the overall aims: with three utilising a quantitative approach and the fourth as a qualitative strand. The quantitative strand included three parts. Firstly, an examination of differences between children eligible for FSM and their non-eligible peers, utilising teacher-pupil report SDQ data (mental health outcome) and national curriculum test data (academic outcome), at baseline. Secondly, exploration of whether there were differential gains for children eligible for FSM after undertaking PATHS compared with a school's usual practice. Thirdly, exploratory analysis was undertaken to explore the relationship between implementation variability and outcomes for children eligible for FSM. The qualitative strand consisted of semi-structured interviews with 24 teachers – selected through maximum variation sampling - regarding their views and experiences of delivering the PATHS programme. The number of teachers utilised from the full sample allowed for breadth and depth of analysis, while avoiding saturation.

Using multilevel modelling (Paterson & Goldstein, 1991), models were constructed including predictor variables at the individual and school level for RQ1 & RQ2, and at the class and individual level for RQ3. For RQ1 it was found that being eligible for FSM was a significant predictor for poorer scores on all five outcomes (externalising problems, internalising symptoms, pro-social behaviour, English and mathematics). The RQ2 analysis found that being eligible for FSM and in the PATHS arm of the trial were significant predictors of higher externalising symptoms, with no other significant finding. The exploratory RQ3 analysis found that: a) high dosage of PATHS (compared with low) and eligibility for FSM was a significant predictor for higher score in mathematics; b)

being in a high or moderate quality (compared to low) PATHS classroom and being eligible for FSM predicted significantly higher externalising scores; and c) being in a classroom where PATHS was delivered with moderate fidelity (compared to low) and eligibility for FSM predicted significantly higher internalising scores. The qualitative interviews aided further understanding of some of the quantitative findings with confluence between the two approaches. This allowed for further depth to some of the conclusions drawn, suggesting practical reasons for implementation variability, as well as some potential reasons why PATHS may have been limited in improving outcomes for children eligible for FSM.

There were a number of methodological and conceptual limitations that were acknowledged and addressed in relation to the overall findings. Methodological issues related to sample selection and representativeness, data collection, sample size, measurement tools, analytical strategy, and additional variables. Conceptual limitations included issues around defining and measuring socio-economic disadvantage and implementation.

There were a number of implications as a result of the findings from the current study for researchers, programme developers, and schools in understanding firstly, the effect on mental health and academic outcomes as a result of socio-economic disadvantage, and the relationship between intervention implementation and outcomes for these children. A key implication was the contribution to the overall picture of child mental health in the UK, which is of growing concern. Children from socio-economically disadvantaged backgrounds are three times more likely to have mental health problems than their more affluent peers. The current study suggests that universal SEL intervention alone may not be enough to fully rectify the mental health issues of this at-risk group. While schools do seem to be well placed in order to address the mental health challenges faced by children from socio-economic backgrounds, an increased focus on implementation is needed. This includes an overall approach to the adoption and commitment to the programme, through provision of adequate time and resources. Moreover, the inclusion of ways to ensure that there is scope for adaptations which make the programme relevant for children from low socio-economic backgrounds, while maintaining programme effectiveness.

8.12.2 Closing statements

The lack of SEL research examining differential gains for children from socio-economic backgrounds has allowed the current study to make a significant contribution to the field in a number of areas. This study contributes to the very limited research base examining both mental health and academic outcomes for children eligible for FSM after undertaking the PATHS curriculum. Moreover, this is one of the first studies to conduct analysis examining implementation variability as a moderator of outcomes for children from low socio-economic backgrounds. Additionally, the incorporation of both quantitative and qualitative methodologies through a concurrent component complementarity mixed methods design allows for a more detailed understanding of the implementation of PATHS, as well as the implications regarding outcomes for children eligible for FSM. What has emerged from the findings is that PATHS alone may not produce positive gains in mental health outcomes for children from low socio-economic backgrounds. In this regard, ways to enhance resilience for this group of at-risk children requires further exploration. While schools may be well-placed in order to deliver interventions which aim to improve mental health outcomes for children at-risk, more support and resources are needed in order to ensure effective implementation is feasible.

In practical and theoretical terms, the findings in the study have made a demonstrable contribution to knowledge, while at the same time highlighting additional areas for research. The effects of growing up in adversity for children from socio-economically disadvantaged backgrounds can be great, with lifelong impact on a number of outcomes. Therefore, it is appropriate to end this thesis by highlighting the importance of continued research in examining ways in which outcomes can be improved for these children.

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Appendix 1: SDQ Questionnaire and scoring sheet

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

		not true	somewhat true	certainly true
1.	Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.	Often lies or cheats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20.	Often volunteers to help others (parents, teachers, other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21.	Thinks things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	Steals from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24.	Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25.	Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Scoring the Informant-Rated Strengths and Difficulties Questionnaire

The 25 items in the SDQ comprise 5 scales of 5 items each. It is usually easiest to score all 5 scales first before working out the total difficulties score. Somewhat True is always scored as 1, but the scoring of Not True and Certainly True varies with the item, as shown below scale by scale. For each of the 5 scales the score can range from 0 to 10 if all 5 items were completed. Scale score can be prorated if at least 3 items were completed.

<u>Emotional Symptoms Scale</u>	Not True	Somewhat True	Certainly True
Often complains of headaches, stomach-aches ...	0	1	2
Many worries, often seems worried	0	1	2
Often unhappy, downhearted or tearful	0	1	2
Nervous or clingy in new situations ...	0	1	2
Many fears, easily scared	0	1	2

<u>Conduct Problems Scale</u>	Not True	Somewhat True	Certainly True
Often has temper tantrums or hot tempers	0	1	2
Generally obedient, usually does what ...	2	1	0
Often fights with other children or bullies them	0	1	2
Often lies or cheats	0	1	2
Steals from home, school or elsewhere	0	1	2

<u>Hyperactivity Scale</u>	Not True	Somewhat True	Certainly True
Restless, overactive, cannot stay still for long	0	1	2
Constantly fidgeting or squirming	0	1	2
Easily distracted, concentration wanders	0	1	2
Thinks things out before acting	2	1	0
Sees tasks through to the end, good attention span	2	1	0

<u>Peer Problems Scale</u>	Not True	Somewhat True	Certainly True
Rather solitary, tends to play alone	0	1	2
Has at least one good friend	2	1	0
Generally liked by other children	2	1	0
Picked on or bullied by other children	0	1	2
Gets on better with adults than with other children	0	1	2

<u>Prosocial Scale</u>	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	0	1	2
Shares readily with other children	0	1	2
Helpful if someone is hurt, upset or feeling ill	0	1	2
Kind to younger children	0	1	2
Often volunteers to help others	0	1	2

The Total Difficulties Score:

is generated by summing the scores from all the scales except the prosocial scale. The resultant score can range from 0 to 40 (and is counted as missing if one of the component scores is missing).

Interpreting Symptom Scores and Defining "Caseness" from Symptom Scores

Although SDQ scores can often be used as continuous variables, it is sometimes convenient to classify scores as normal, borderline and abnormal. Using the bandings shown below, an abnormal score on one or both of the total difficulties scores can be used to identify likely "cases" with mental health disorders. This is clearly only a rough-and ready method for detecting disorders – combining information from SDQ symptom and impact scores from multiple informants is better, but still far from perfect. Approximately 10% of a community sample scores in the abnormal band on any given score, with a further 10% scoring in the borderline band. The exact proportions vary according to country, age and gender – normative SDQ data are available from the web site. You may want to adjust banding and caseness criteria for these characteristics, setting the threshold higher when avoiding false positives is of paramount importance, and setting the threshold lower when avoiding false negatives is more important.

	Normal	Borderline	Abnormal
Parent Completed			
Total Difficulties Score	0 - 13	14 - 16	17 - 40
Emotional Symptoms Score	0 - 3	4	5 - 10
Conduct Problems Score	0 - 2	3	4 - 10
Hyperactivity Score	0 - 5	6	7 - 10
Peer Problems Score	0 - 2	3	4 - 10
Prosocial Behaviour Score	6 - 10	5	0 - 4
Teacher Completed			
Total Difficulties Score	0 - 11	12 - 15	16 - 40
Emotional Symptoms Score	0 - 4	5	6 - 10
Conduct Problems Score	0 - 2	3	4 - 10
Hyperactivity Score	0 - 5	6	7 - 10
Peer Problems Score	0 - 3	4	5 - 10
Prosocial Behaviour Score	6 - 10	5	0 - 4

Generating and Interpreting Impact Scores

When using a version of the SDQ that includes an "Impact Supplement", the items on overall distress and social impairment can be summed to generate an impact score that ranges from 0 to 10 for the parent-completed version and from 0-6 for the teacher-completed version.

	Not at all	Only a little	Quite a lot	A great deal
Parent report				
Difficulties upset or distress child	0	0	1	2
Interfere with HOME LIFE	0	0	1	2
Interfere with FRIENDSHIPS	0	0	1	2
Interfere with CLASSROOM LEARNING	0	0	1	2
Interfere with LEISURE ACTIVITIES	0	0	1	2
Teacher report				
Difficulties upset or distress child	0	0	1	2
Interfere with PEER RELATIONSHIPS	0	0	1	2
Interfere with CLASSROOM LEARNING	0	0	1	2

Responses to the questions on chronicity and burden to others are not included in the impact score. When respondents have answered "no" to the first question on the impact supplement (i.e. when they do not perceive the child as having any emotional or behavioural difficulties), they are not asked to complete the questions on resultant distress or impairment; the impact score is automatically scored zero in these circumstances.

Although the impact scores can be used as continuous variables, it is sometimes convenient to classify them as normal, borderline or abnormal: a total impact score of 2 or more is abnormal; a score of 1 is borderline; and a score of 0 is normal.

Appendix 2: PATHS Observation Schedule

PATHS to Success Lesson Observation Proforma

Date (dd/mm/yy)	
School password/code	
Year group	
Teacher password	
PATHS unit number	
PATHS lesson number	
PATHS lesson title	
Observation start time	
Observation end time	
Name of observer	
Fieldwork or coaching?	F [] C []

General contextual notes	
<i>Contextual information that might be relevant to the conduct of the lesson (e.g. other things happening in the class or school). Remember 'sensitising' concepts.</i>	
Descriptive Comments	Interpretations
Number of children present: _____ Number of adults supporting class: _____	
<p>Physical artefacts – present and accessible/visible?</p> <ul style="list-style-type: none"> - Posters: None [] Some [] All [] - Feelings dictionaries/feelings faces [] - Other artefacts (e.g. drop-box) [] <p>PATHS Pupil of the Day (tick one only)</p> <ul style="list-style-type: none"> - No evidence [] - Evidence, but process not seen [] - Done but used poorly or inconsistently [] (e.g. doesn't complete or send compliment list) - Exemplary – completely and consistently [] 	

1. Fidelity/adherence

Rate the extent to which the teacher delivers the lesson with fidelity to the PATHS guidance:

1a. Coverage of lesson objectives

- To what extent does the teacher cover the general and specific objectives of the lesson?

<<SLIDING SCALE FROM 0-10>>

1b. Adherence to lesson structure and sequence

- To what extent does the teacher follow the structure and sequence of activities outlined in the lesson guidance? E.g. introduction, core activities, closure.

<<SLIDING SCALE FROM 0-10>>

1c. Core components

- How closely does the teacher adhere to the guidance when teaching the core activities of the lesson? e.g. content, suggested mode of delivery.

<<SLIDING SCALE FROM 0-10>>

Fidelity notes	
<i>Descriptive Comments</i>	<i>Interpretations</i>
1a.	
1b.	
1c.	

2. Adaptations

Adaptation (addition, omission and enhancement) notes	
<i>Descriptive Comments</i>	<i>Interpretations</i>

3. Quality

Rate the quality of delivery of the lesson:

3a. Preparedness

- *How well prepared is the teacher for the lesson?*

<<SLIDING SCALE FROM 0-10>>

3b. Interest and enthusiasm

- *Rate the teacher's interest and enthusiasm in his/her delivery of the lesson*

<<SLIDING SCALE FROM 0-10>>

3c. Clarity of expression

- *How clearly does the teacher explain key concepts and activities in the lesson?*

<<SLIDING SCALE FROM 0-10>>

3d. Teacher responsiveness as required

- *How well does the teacher respond to pupil queries/ meet the needs of all of the class if it is required?*

<< NOT APPLICABLE>>

OR

<<SLIDING SCALE FROM 0-10>>

Quality notes	
<i>Descriptive Comments</i>	<i>Interpretations</i>
3a.	
3b.	
3c.	
3d.	

4. Participant responsiveness

Rate children's engagement with and responsiveness to the lesson

4a. Pupil engagement in core activities

- *Rate the extent to which children in the class actively participate in the lesson activities (e.g. joining in role plays, answering questions).*

<<SLIDING SCALE FROM 0-10>>

4b. Pupil interest levels

- *Rate the level of sustained interest and attentiveness among children in the class during the lesson.*

<<SLIDING SCALE FROM 0-10>>

4c. Pupil learning

- *Rate the extent to which the learning objectives have been met.*

<<SLIDING SCALE FROM 0-10>>

Participant responsiveness notes	
<i>Descriptive Comments</i>	<i>Interpretations</i>
4a.	
4b.	
4c.	

5. Reach

Approximately what proportion of the class are present throughout the lesson?

<<SLIDING SCALE FROM 0-10>>

Participant reach and withdrawal notes	
<i>Descriptive Comments</i>	<i>Interpretations</i>

Appendix 3: Descriptive statistics and Exploratory Factor Analysis of PATHS implementation indicators

	Scoring	Mean (sd)	Initial designation	Factor	
				Quality and responsiveness	Procedural Fidelity
Projected dosage (% lessons complete by end of the school year) based on progress against the implementation schedule?	0-100	65.18 (17.43)	Dosage	-	-
Proportion of the class present during the lesson?	0-100	91.86 (1.10)	Reach	-	-
To what extent does the teacher cover the general and specific objectives of the lesson?	0-10	8.74 (1.46)	Fidelity	0.57	0.48
To what extent does the teacher follow the structure and sequence of activities outlined in the lesson guidance?	0-10	8.04 (2.33)	Fidelity	0.09	0.96
How closely does the teacher adhere to the guidance when teaching the core activities of the lesson?	0-10	7.37 (2.22)	Fidelity	0.08	0.87
How well prepared is the teacher for the lesson?	0-10	8.68 (1.29)	Quality	0.74	0.30
Rate the teacher's interest and enthusiasm in his/her delivery of the lesson.	0-10	8.99 (1.11)	Quality	0.72	0.18
How clearly does the teacher explain key concepts and activities in the lesson?	0-10	8.41 (1.28)	Quality	0.81	0.21
How well does the teacher respond to pupil queries/meet the needs of all of the class if it is required?	0-10	8.47 (1.35)	Quality	0.82	0.04
Rate the extent to which children in the class actively participate in the lesson activities.	0-10	7.46 (1.45)	Responsiveness	0.77	-0.01
Rate the level of sustained interest and attentiveness among children in the class during the lesson.	0-10	6.82 (1.85)	Responsiveness	0.84	-0.01
Rate the extent to which the learning objectives have been met.	0-10	7.56 (1.51)	Responsiveness	0.87	0.21

(Humphrey et al., 2017)

Appendix 4: Semi-structured interview protocol

Teacher Interview Schedule (semi-structured) (20-40 minutes)

Interview data: aims

1. To explore, understand and explain the processes of implementation of PATHS in English educational contexts
2. To triangulate with and support interpretation of observation and impact data

Data needed for:

- (a) Examining processes of implementation
 - Fidelity – the extent to which the school is adhering to the intended treatment model
 - Dosage - how much of session delivered; number of sessions
 - Quality – how well different PATHS components are delivered
 - Participant responsiveness – the degree to which children and their parents engage with the intervention
 - Programme reach – rate and scope of participation
 - Monitoring of control conditions
 - Adaptation – the nature and extent of changes made to the intervention
- (b) Identification of context specific factors affecting implementation
- (c) Evaluating the feasibility of the future implementation of PATHS in English educational contexts

Preamble

1. Check that the interviewee has received the **information sheet and consent form** and understands the project and his/her role in it.
Ask: Have you any questions about the project?
2. Emphasise that:
 - The research team is speaking to a range of people involved in PATHS eg senior management, teachers, pupils at all of our (23) PATHS schools
 - We are interested in individual experiences and thoughts about PATHS, both positive and negative... “this is your opportunity to make your voice heard on PATHS ... your comments may be helpful to others in your position at other schools at a later date”
 - However, we combine all the data we collect to provide an overall picture of PATHS and its implementation and any comments in the report are attributed very generally, for example, as “A (Year 3) teacher commented that...” . Any comments/opinions will not be reported back to schools

Ask: Have you any questions about how we use your comments?

Ethics:

Remind interviewee:

- The interview will take about 30 minutes.
 - You do not have to answer any questions that you are not comfortable with
 - You can stop at any time, no explanation needed
 - If any question doesn't make sense, ask for an explanation
- Ask:** Is it alright to record the interview? The transcript will only be seen by those working on the project. I will send you a copy too if you wish.

Ask: Are you able/willing to sign the consent form?

Explain procedure:

I will begin the interview with my name, the date, time and the identifying code we have assigned to your school - this is just to keep the recordings organised. All your details will be anonymised when the data is transcribed.

The first question will be about your role in school, followed by general questions about social and emotional learning in school, then moving on to PATHS more specifically

Ask: Have you any questions before we start?

Ask: Is it OK for me to start recording now?

Interview schedule

State researcher's name, date, time, school identifying code (for data management)

Can I just ask you to confirm your roles at school.....

.....and in relation to PATHS (eg Y3 teacher, co-ordinator, etc)

A. Usual practice (Implementation - programme differentiation)

Aims: to clarify foundations for PATHS and school ethos round SEL; perceptions of benefits of PATHS/SEL; perceptions of need for PATHS/SEL; previous practice around social-emotional learning, whether starting PATHS has been integrated or resulted in changes to this

1. Why has the school decided to implement PATHS?

Looking for information about:

- What sort of outcomes/change is the school aiming for? Is there a shared understanding?
- Are there specific needs within the school that PATHS is expected to address/meet?
- Whose decision was it to adopt PATHS?

2. What was done in school to develop social and emotional skills before you started doing PATHS?

- Do you still do this?
- Is/was this the whole school or just within your classroom?

Looking for information about:

- a. Is PATHS part of a range of similar programmes/strategies? How does PATHS build on other local or national programmes/interventions within school?
- b. Has PATHS replaced previous programmes/ interventions/ approaches (eg SEAL)? Is it delivered alongside them? Are they integrated?
- c. PATHS is just in KS2 – what does the rest of school do?

3. How would you describe the overall profile of PATHS in your school?

- Is it just classroom teachers in Y3-5 (Y4-6) that are involved?
- How involved is the headteacher? Senior management team?

Looking for information about:

- a. Type of HT/SMT support
 - verbal only?
 - Active eg training time allowed, curriculum time allowed, included in planning etc

B. Implementation (dosage, adaptation)

Aims: clarify implementation dosage and fidelity; modifications or adaptations and reasons for them; generalisation (link to quality)

4. How long have you been implementing PATHS?

5. How often do you teach PATHS? *Ask for example*

6. Is this a timetabled session? Same time every week?

Looking for:

- is timetabling a problem
- (gently probe) status of PATHS? Competing priorities?

7. Are all pupils in the class present for PATHS?

Looking for:

- Participant reach
- Is the PATHS session used as withdrawal time? If so, do these pupils have PATHS at another time?
- Do some pupils have a more targeted approach eg SEAL small group work, nurture group? Is this in addition or instead of PATHS?

8. Are you able to cover all the lesson content in the time available? How long is a lesson on average?

Ask for examples

Looking for (probe gently):

- Whether skipping content and why eg competing priorities, lack of time, low status of PATHS

9. Have you repeated any lessons?

Ask for examples; gently probe reasons

10. Have you skipped any lessons?

Ask for examples; gently probe reasons

11. Have you been able to use PATHS outside of the specific lessons/ in other subjects (teachable moments)?

Ask for examples eg which lessons, which concepts, in what ways?

12. Have you or the pupils been able to apply/generalise from PATHS in the classroom?

Ask for examples eg do pupils use control signals, fingers linked, feelings faces, compliments, golden rule

13. Have you/the pupils been able to apply/generalise from PATHS outside the classroom eg playtime?

Ask for examples eg do pupils use control signals, fingers linked, feelings faces, compliments, golden rule

C. Attitudes to PATHS specifically

Aims: clarify teacher and pupil attitudes to PATHS, including perceptions of impact; clarify fidelity and dosage, pupil responsiveness; describe and/or explain modifications or adaptations; inform interpretation of process data; inform future roll-out of PATHS in UK context

14. What do you think about the PATHS lessons and structure?

- How useful do you find the lesson plans?
- How much preparation is needed?

Ask for examples; probe for explanations eg why like/don't like scripted lessons?
Looking for (gently probe):

- Do you follow the plans exactly? Make adaptations?
- Is it useful to have everything prepared? What would be more useful?

- What do you think about the order of the lessons/structure of the programme? Have you changed the order around at all?

Looking for:

- Adaptations or changes
- Ask for examples – is this proactive, intended to enhance engagement and responsiveness? Is this reactive eg due to barriers (programme resources, lack of time?)

- How familiar are the concepts, strategies?

Looking for:

- Changes to usual practice, foundations for PATHS

- *(If Y4/5/6) How useful/necessary were the Jump Start lessons? Ask for examples*

15. What do you think about the PATHS resources *(if not included above)*

- How appropriate/suitable are the resources?

Ask for examples eg availability of resources, age-level, particular class, SEN, emotional level, suitability for English context?

Looking for:

- How much do you adapt/make changes to the lessons?
- Ask for examples – want to identify whether these changes are proactive, intended to enhance engagement and responsiveness or reactive eg due to

- How useful have you found the parent (send-home) activities?
- How useful has PATHS been for meeting specific needs in your class?

Ask for examples eg improving relationships, empathy, inclusion, managing emotions, understanding feelings

- Are there any aspects of PATHS that you have found particularly useful for your class?

Ask for examples eg pupil of the day, compliments, Golden Rules, talking about feelings, control signals, fingers linked

- Are there any aspects of PATHS that you have found not useful/appropriate?

Ask for examples eg pupil of the day, compliments, Golden Rules, talking about feelings, control signals, fingers linked

16. What do the pupils in your class think about PATHS?

- Do they look forward to doing PATHS?
- Are they engaged by/do they enjoy the lessons?
- Are there any particular aspects they like?
- Are some groups more responsive than others (*eg SEN, EBD, quiet/withdrawn*)?
- PATHS has been designed for all the children in the class; have you found that it is useful for some groups more than others? (*eg EAL, SEN, EBD, withdrawn*)

Ask for specific examples (positive and negative)

17. **Perceptions of impact:** Has PATHS made a difference to your pupils? All pupils, or some groups of pupils particularly? The school more widely?

NB Acknowledge that may be too early to ask

Ask for examples eg Improved relationships, social skills, understanding of emotions, behaviour, self-control, confidence and participation (eg quiet pupils more prepared to participate), classroom climate/ethos/atmosphere, learning, motivation

D. Skills/knowledge/self-efficacy

Aims: teacher perceptions of self-efficacy, confidence, competence, skills and/or knowledge to implement PATHS; attitudes to training – quantity/quality, timing, content, utility etc; attitudes to support/coaching model - quantity/quality, timing, frequency, type of support available, utility etc. (NB to inform future roll-out)

18. **Training** The PATHS programme provides a training package for teachers, with one day of training as you begin to deliver PATHS and a top-up half-day at the beginning of the second term. Were you able to attend the training?

Clarify whether first day, second (top-up) half-day or both

If yes:

- How useful did you find this? What particular aspects were useful?
- Was there anything missing?
- What additional/alternative training might have been useful?
- Were you required to 'cascade' the training/ brief colleagues?

Ask for examples (differentiate between first/second days)

If no:

- Did any colleagues attend the training? Who?
- Did they cascade the training/brief you on the training later at school?
- How useful was this?

Ask for examples (differentiate between first/second days)

19. *(If appropriate)* Are you planning to attend the second training day? *(why/why not?)*

20. Have you had any additional training relating to PATHS specifically?

21. Have you had any other opportunities for training/professional development around social and emotional learning?

Ask for examples

22. **PP on-going support (coaching model)** In addition to the initial training, the PATHS programme includes ongoing support from a PATHS psychologist who has been assigned to your school. How useful have you found this ongoing support?

23. Would you like to see more support?

24. Would you like to see less support?

25. Would you like to see different types of support?

Ask for examples

26. How important do you feel it is to have access to ongoing support?

E. Factors affecting implementation

Aims: factors influencing implementation; operation of factors as barriers or/and facilitators; responses to barriers (eg disregarded, re-active/pro-active adaptations)

The list below outlines the key anticipated factors that may influence the implementation of PATHS at programme, classroom and school levels (there is likely to be interaction across levels). The questions above should have addressed most of these; however, please be aware of these factors so that answers may be probed or questions revisited if necessary.

Factors potentially affecting implementation

- a. Programme level:
 - suitability of resources
- b. Teacher level:
 - self-efficacy
 - knowledge and skill proficiency
 - level of training
 - external support
 - support from colleagues
 - curriculum time
 - preparation time
 - attitude/buy-in – do not perceive need for or benefits of PATHS; not compatible with teaching style
- c. Pupil level:
 - Meets needs
 - Engaged, responsive (appropriate resources)
 - Classroom climate/pupil behaviour impede implementation
- d. School level
 - Prior positive/negative involvement with similar approaches and existing climate supportive/not supportive of SEL/PATHS approach
 - PATHS integrated with other aspects of curriculum
 - Head teacher and senior management team actively supportive of PATHS
 - Head teacher and senior management state that supportive but not actively demonstrating support (*status of PATHS within school*)
 - Sufficient resources allocated – classroom/curriculum time
 - PATHS integrated with other aspects of school-life *posters just in classrooms or across school? Whole-staff awareness of PATHS (other than teachers directly involved in delivery, including eg lunchtime staff)*

27. How easy has it been to implement PATHS?

- Is there anything about your school that has made it easier?

Ask for specific examples (positive and negative)

28. Have there been any challenges to the implementation of PATHS?

Ask for specific examples (positive and negative)

F. Sustainability

Aims: attitudes towards PATHS and change over time; sustainability

29. The PATHS project runs for two years; how likely do you think it is that you will continue with PATHS after this?

- The entire programme?
- Particular lessons?
- PATHS framework (structure) but with amended lessons?
- Key aspects of PATHS? (*Ask for examples*)

Ask for specific examples (positive and negative)
Eg PPOD, compliments, golden rules, feelings faces

G. Summarising experience

Aims: tap attitudes, beliefs, unanticipated experiences and factors

As you know, the project is examining how well PATHS works in English schools. If it is successful, then it may be rolled out to more schools. Based on your experiences of PATHS so far, what advice would you give to a teacher in another school who has just been told she/he has to implement PATHS next term?

Ask for specific examples if appropriate (positive and negative)

H. Closing the interview:

Aims: unanticipated experiences, factors etc; emergent themes

- I. Is there anything that you would like to add?
- J. Is there anything that you think I should have asked you about, or missed out?

ASK: Do you have any questions?

Thank you very much for your help and time. I will now turn off the recorder.

Appendix 5: Information letter – PATHS to Success



**National Institute for
Health Research**



PATHS TO SUCCESS

www.pathstosuccess.info

20th April 2012

Dear colleague

I am writing to invite your school to participate in an exciting research project called 'PATHS to Success'. Our project will evaluate the effectiveness of a primary school based intervention called Promoting Alternative Thinking Strategies (PATHS). PATHS helps children manage their behaviour, understand their emotions and work well with others. It is a 'universal' intervention in which all children in a given class take part. PATHS is supported by a very strong international evidence base. It consists of a series of lessons that cover topics such as identifying and labelling feelings, controlling impulses, reducing stress, and understanding other people's perspectives. It is designed to be delivered by teachers for about one hour per week (usually 3 x 20 minute sessions). Our project is designed to assess the effect of PATHS on children's mental health, behaviour and academic attainment.

Our research will use a 'randomised controlled trial' design - this is the gold standard method for testing if an intervention works. We will randomly allocate primary schools to an intervention group or comparison group. The intervention group schools will be trained to provide the PATHS intervention. Their teachers will then use the intervention materials to deliver lessons over a two year period to pupils in Years 3, 4 and 5 (the comparison group schools will continue their usual practice during this period). Members of our team will work with and support these schools to ensure that PATHS is implemented well, and we will record any changes they make to see if this affects later outcomes. At the end of the two year period, schools will be free to continue (or, in the case of control schools, start) to implement PATHS. Further information is available at www.pathstosuccess.info

There will be benefits for **all** schools that participate in the project. All schools - regardless of the group to which they are randomly assigned (see above) - will receive the following in relation to pupils in Key Stage 2:

- Payment of £100 towards teacher cover for survey completion at each annual wave of data collection
- Bespoke InCAS/PIPS (Performance Indicators in Primary Schools) feedback (pupil, class and school level) will be provided on an annual basis. InCAS/PIPS is a standardised assessment system that provides information on pupils' reading and maths levels, in addition to their academic potential. See more at www.cemcentre.org/pips
- Bespoke aggregated (class and school level) feedback about the behaviour, social skills and health-related quality of life of pupils, derived from established, gold-standard surveys (e.g. the Strengths and Difficulties Questionnaire) will be provided on an annual basis. This will be presented in a straightforward, accessible format so that it can be used to inform school policy,

planning and practice, in addition to providing useful evidence for the new OFSTED framework (e.g. Behaviour and Safety).

- An opportunity to be involved in a piece of cutting-edge research that has the potential to shape future educational policy and practice in England.
- An opportunity to explore and develop social and emotional learning practice as part of a network of schools in Greater Manchester

Schools randomly allocated to the intervention group will receive the PATHS curriculum package, as follows:

- Initial and follow-up training for Year 3, 4, 5 and 6* class teachers
- PATHS curriculum materials for Years 3, 4, 5 and 6*
- Ongoing technical support and assistance from an assigned PATHS psychologist (e.g. coaching, modelling, feedback)

*Training and materials for Year 6 will be disseminated at the start of the second year of the project.

We are able to offer all of the above to participating schools at **no financial cost**. However, we do need a commitment to fulfil our data collection requirements in relation to the target cohort of pupils (one class each in Years 3, 4 and 5 at the start of the 2012/13 school year). All schools will be asked to complete school, teacher, parent and pupil surveys, in addition to the PIPS assessments, on an annual basis in the summer term (e.g. June/July). In schools in the PATHS group, we will also need to collect data relating to implementation (in the form of brief surveys, observations and interviews) during 6 fieldwork visits in each of the two years of the project. These visits will be arranged on dates that are convenient to the schools.

We hope that this project is of interest to your school. A member of our project team will contact you by telephone to follow up this invitation and answer any queries you may have in the next few days. In the meantime, please feel free to visit our website, www.pathstosuccess.info, where you can find further information about the PATHS programme and our research project.

Yours sincerely



Dr. Alexandra Barlow
Research Associate
PATHS to Success Project
0161 275 3504
alexandra.barlow@manchester.ac.uk



Professor Neil Humphrey
Principal Investigator
PATHS to Success Project
0161 275 3404
neil.humphrey@manchester.ac.uk



PATHS TO SUCCESS

INFORMATION SHEET FOR TEACHERS

Your school is involved in an exciting project about the Promoting Alternative Thinking Strategies (PATHS) curriculum, called 'PATHS To Success'. PATHS is a programme for all children that helps them to manage their behaviour, understand their emotions and work well with others. Our research project will help us to understand if PATHS works for children in Years 3-6. The project is funded by the National Institute for Health Research.

We are writing to you to explain your role as a teacher in the research project. We will collect your views, those of children in your class, and their parents once a year starting Winter term 2012 (see below). Specific information about this will be sent nearer the time.

If you would like any more information or have any questions about the research project, please telephone Dr. Alexandra Barlow on 0161 275 3504 or email her at alexandra.barlow@manchester.ac.uk.

Who will conduct the research?

The research will be conducted by Prof. Neil Humphrey and the PATHS to Success research team in the School of Education, University of Manchester, Oxford Road, Manchester M13 9PL.

Title of the research

"PATHS to Success"

What is the aim of the research?

Our main aim is to examine the impact of the PATHS curriculum on the social and emotional wellbeing of children in primary schools in England.

Where will the research be conducted?

Primary schools in Greater Manchester.

What is the duration of the research?

The project itself runs from January 2012 until August 2017. The schools that implement PATHS (see below) will do so from September 2012 to July 2014.

Why have I been chosen?

We are writing to you because your school is taking part in the PATHS to Success Project. Schools have been randomly chosen to (a) implement PATHS over a two year period (PATHS schools), or (b) continue as normal (comparison schools). We will be collecting data in both PATHS and comparison schools. After two years, all schools will be free to decide whether they wish to start/continue using PATHS.

What would I be asked to if I took part?

All participating schools (e.g. both PATHS and comparison schools)

Teachers (and/or support staff, such as teaching assistants) of participating Year 3, 4 and 5 (and 6 in the second year of the project) classes in both PATHS and comparison schools will be asked to complete a short online survey about each pupil in their class that focuses on their strengths and difficulties. These surveys will be completed three times – in June/July 2012, 2013 and 2014. Each survey will take around 5 minutes to complete for each child.

Additionally, one member of staff (the PATHS to Success school contact) in each participating school will complete a survey about the school's usual practice. These surveys will also be completed three times – in June/July 2012, 2013 and 2014 – and will take approximately 15 minutes to complete.

PATHS schools only

In addition to the above, teachers of participating Year 3, 4 and 5 (and 6 in the second year of the project) classes in PATHS schools only will also complete a short survey about themselves which will cover issues such as the length of time they have been teaching, and their feelings about social and emotional learning programmes like PATHS. This survey will be completed once – at the initial PATHS training for teachers in September 2012 – and will take approximately 15 minutes to complete.

Teachers of participating classes in PATHS schools will also complete two further short surveys – one about their teaching of PATHS (e.g. how much they adapt the materials) and the other about factors affecting their teaching of PATHS (e.g. the pressures of competing priorities). The former survey will be completed in the spring term, and the latter in the summer term, and will take approximately 15 minutes each. Both surveys will be completed twice – once in 2012/13 and again in 2013/4.

Finally, in our research visits, we will observe teachers of participating classes delivering PATHS lessons approximately twice per year, after which they will be invited to participate in a short interview (approximately 30 minutes). This is intended to explore teachers' thoughts and experiences of PATHS, including resources, implementation issues, training and the support model.

What happens to the data collected?

The data will be analysed by our research team at the University of Manchester. We will write a report based on our analyses for the National Institute for Health Research. It is also likely that we will write articles for academic journals based on the project findings. Finally, it is possible that we will write a book about the research. In all publications and reports data will be presented anonymously.

How is confidentiality maintained?

All data provided will be treated as confidential and will be completely anonymous. Identifying information (e.g. pupil names) will only be used in order to match responses about the same individual from different respondents (e.g. parents and teachers) and across different times (e.g. June/July 2012, 2013, and 2014). After this matching process is complete, all identifying information will be destroyed. For interview data, names will be changed at transcription and the audio-recordings will then be destroyed after the project is completed.

The website that houses the survey will be completely secure and password protected. All survey data will be stored on a secure, password protected computer to which only senior members of the research team have access.

For interview data, names will be changed at the time of transcription and the source of any Comments included in reports or publications will be anonymous

Criminal Records Check

Every member of our research team has undergone a Criminal Records Bureau check at the Enhanced Disclosure level.

Will I be paid for participating in the research?

We are not able to offer any payment or incentive for participating in this study.

Contact for further information

If you would like any more information or have any questions about the research project, please telephone Dr. Alexandra Barlow:

Dr. Alexandra Barlow
Educational Support and Inclusion
School of Education
University of Manchester
Oxford Road
Manchester
M13 9PL
Tel: 0161 275 3504
Email: alexandra.barlow@manchester.ac.uk

Also, please see our website for further details about the PATHS curriculum and background, the project design and project team.

The website can be found at: www.pathstosuccess.info

What if something goes wrong?

If completing the survey makes you worry about any of your pupils' wellbeing then you should speak to your school's safeguarding and child protection officer in the first instance.

If you ever wish to make a formal complaint about the conduct of the research you should contact the Head of the Research Office, Christie Building, University of Manchester, Oxford Road, Manchester M13 9PL.



PATHS TO SUCCESS

TEACHER CONSENT FORM

An information sheet is attached to this form. Please read it carefully.

Please complete the slip below to indicate if you would be happy to participate in the research strand of the PATHS to Success project, which involves an observation of a PATHS lesson and an interview by a member of our PATHS research team.

Finally, please also remember that if you do decide to take part, you are free to change your mind at any point in the study.

I **do not** / **do wish** (please delete as appropriate) to participate in the PATHS lesson observation and interview strand of the PATHS to Success project. My details are as follows:

My name	
School name	

Signed: _____

Date: _____

PATHS TO SUCCESS

INFORMATION SHEET FOR PARENTS

Your child's school is involved in an exciting project about the Promoting Alternative Thinking Strategies (PATHS) curriculum, called 'PATHS To Success'. PATHS is a programme for all children that helps them to manage their behaviour, understand their emotions and work well with others. Our research project will help us to understand if PATHS works for children in Years 3-6. The project is funded by the National Institute for Health Research.

We are writing to you because your child's school is involved in the project and we would like to know what you think about it. We will collect your views, those of your child, and his/her teacher once a year starting June/July 2012 (see below).

Please take time to read the following information carefully and decide whether or not you would like to take part.

If you would like any more information or have any questions about the research project, please telephone Dr. Alexandra Barlow on 0161 275 3504 or email her at alexandra.barlow@manchester.ac.uk.

Who will conduct the research?

The research will be conducted by Professor Neil Humphrey and his research team at the School of Education, University of Manchester, Oxford Road, Manchester M13 9PL.

Title of the research

"PATHS To Success"

What is the aim of the research?

Our main aim is to examine the impact of the PATHS curriculum on the social and emotional wellbeing of children in primary schools in England.

Where will the research be conducted?

Primary schools in Greater Manchester.

What is the duration of the research?

The project itself runs from January 2012 until August 2017. The schools that implement PATHS (see below) will do so from September 2012 to July 2014.

Why have I been chosen?

We are writing to you because your child's school is taking part in the PATHS to Success Project. Schools will be randomly chosen to (a) implement PATHS over a two year period (PATHS schools), or (b) continue as normal (comparison schools). We will be collecting data in both PATHS and comparison schools. After two years, all schools will be free to decide whether they wish to start/continue using PATHS.

What would I be asked to if I took part?

You will be asked to complete a brief online survey about your child's strengths and difficulties. Your child's class teacher will complete a similar survey.

Your child will be asked to complete a short survey about how well they work with others and how they feel about themselves and their school. If your child needs help to do this, they will be able to get support from a member or school staff or one of our researchers.

These surveys will be completed three times – in June/July 2012, 2013 and 2014. They will take approximately 10 minutes to complete each time.

In consenting to take part you are also giving permission for your child and his/her teacher to complete these surveys.

If you do not have access to the internet we will be happy to either provide a paper copy or complete it over the telephone with you at an agreed time. If you would like to do this please contact Dr. Alexandra Barlow (details below) and she will arrange this for you.

What happens to the data collected?

The data will be analysed by our research team at the University of Manchester. We will write a report based on our analyses for the National Institute for Health Research. It is also likely that we will write articles for academic journals based on what we find out in the project. Finally, it is possible that we will write a book about the research. Your child's name will not be used in any of the reports that we write.

How is confidentiality maintained?

All data provided will be treated as confidential and will be completely anonymous. Identifying information (e.g. your child's name) will only be used in order to match responses about the same individual from different respondents (e.g. parents and teachers) and across different times (e.g. June/July 2012, 2013, and 2014). After this matching process is complete, all identifying information will be destroyed.

The website that houses the survey will be completely secure and password protected. All survey data will be stored on a secure, password protected computer to which only senior members of the research team have access.

What happens if I do not want to take part or I change my mind?

It is up to you if you want to take part.

If you decide to take part you do not need to do anything – you will be sent further details about when and how to complete the survey in the near future.

If you decide not to take part then you need to either complete the opt-out consent form enclosed and return it to our research team at the address above or contact Dr. Alexandra Barlow by telephone or email (details above) by Friday 1st June 2012.

If you decide to take part and then change your mind, you are free to withdraw at any time without needing to give a reason. If you do this please rest assured that we will destroy any data collected about your child as part of the study.

Will I be paid for participating in the research?

We are not able to offer any payment or incentive for participating in this study.

Criminal Records Check

Every member of our research team has undergone a Criminal Records Bureau check at the Enhanced Disclosure level.

Contact for further information

Dr. Alexandra Barlow
Educational Support and Inclusion
School of Education
University of Manchester
Oxford Road
Manchester
M13 9PL
Tel: 0161 275 3504
Email: alexandra.barlow@manchester.ac.uk

Also, please see our website for further details about the PATHS curriculum and background, the project design and project team.

The website can be found at: www.pathstosuccess.info

What if something goes wrong?

If completing the survey makes you worry about your child's wellbeing then you should contact the school in the first instance and ask to speak to his/her teacher.

You can also get independent support and advice from a charity called Young Minds. Their parent helpline number is 0808 802 5544.

If you ever wish to make a formal complaint about the conduct of the research you should contact the Head of the Research Office, Christie Building, University of Manchester, Oxford Road, Manchester M13 9PL.

PATHS TO SUCCESS

PARENT CONSENT FORM

An information sheet is attached to this form. Please read it carefully before making a decision about taking part.

If you are willing to take part then you do not need to do anything at the moment.

If you decide not to take part, then you need to complete the opt-out consent form below and use the freepost code below and return it to:

FREEPOST RLYU-KAAB-AXRC

Dr. Alexandra Barlow,
Educational Support and Inclusion,
School of Education,
University of Manchester,
Oxford Road,
Manchester,
M13 9PL.

Alternatively, Dr. Barlow can be contacted by telephone on 0161 275 3504 or email at alexandra.barlow@manchester.ac.uk. If you do not wish to participate please let us know by Friday 1st June 2012.

Finally, please also remember that if you do decide to take part, you are free to change your mind at any point in the study.

I **do not** wish to participate in the PATHS to Success project. My details are as follows:

My name	
My child's name	
Name of my child's school	

Signed: _____

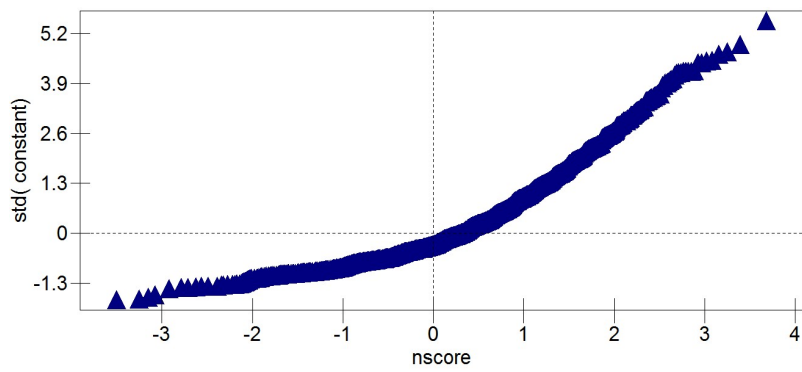
Date: _____

Appendix 7: Testing assumptions – Independent Errors - Durbin-Watson Values Full Table

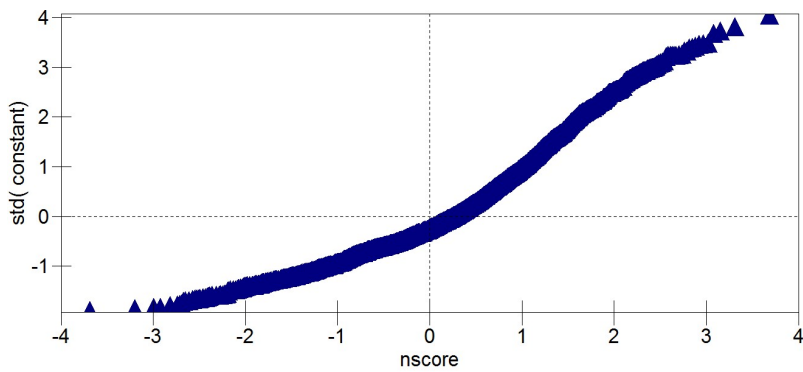
Model	Durbin-Watson value (d=)	Meets assumption for analysis?
RQ1 Internalising	1.878	Y
RQ1 Externalising	1.877	Y
RQ1 Pro-social	1.880	Y
RQ1 Academic - Reading	1.971	Y
RQ1 Academic - Mathematics	1.934	Y
RQ2 Internalising	1.727	Y
RQ2 Externalising	1.473	Y
RQ2 Pro-Social	1.650	Y
RQ2 Academic – Reading	1.257	Y
RQ2 Academic - Mathematics	1.348	Y
RQ3 – Implementation – Internalising	1.655	Y
RQ3 – Implementation – Externalising	1.387	Y
RQ3 – Implementation– Pro-social	1.565	Y
RQ3 – Implementation – Reading	1.241	Y
RQ3 – Implementation – Mathematics	1.350	Y

Appendix 8: Testing Assumptions- Normal Probability Plots

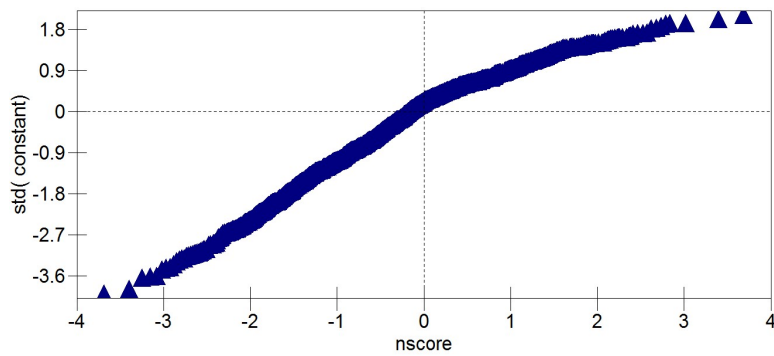
Individual level plots



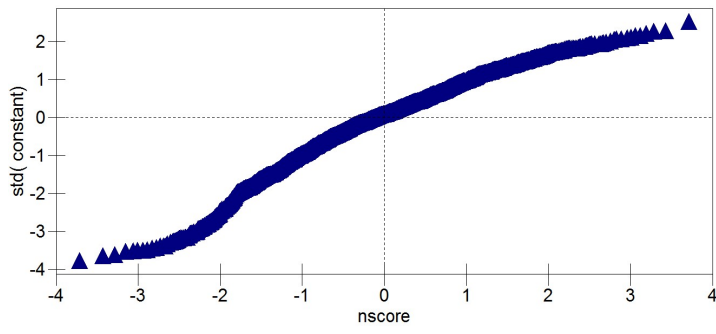
Internalising



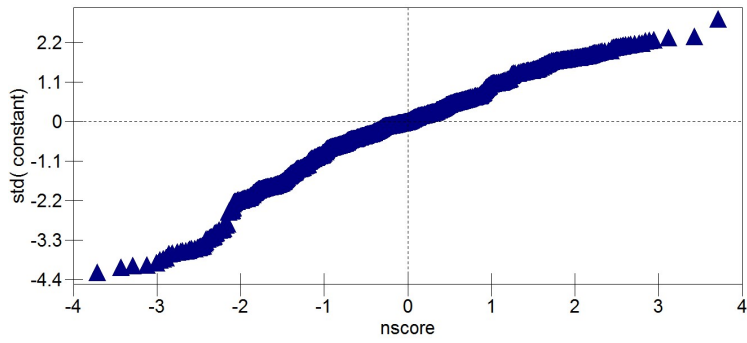
Externalising



Pro-social

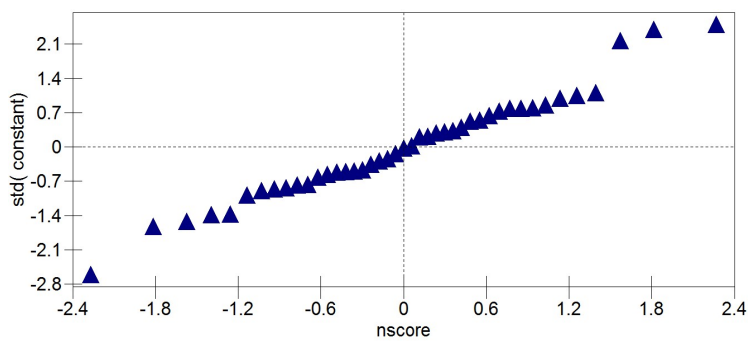


Academic - English

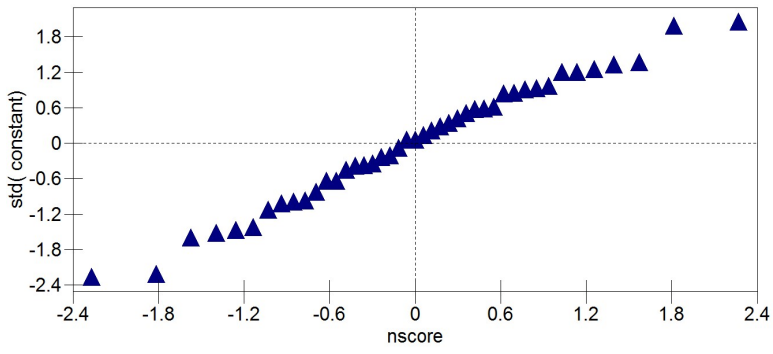


Academic - mathematics

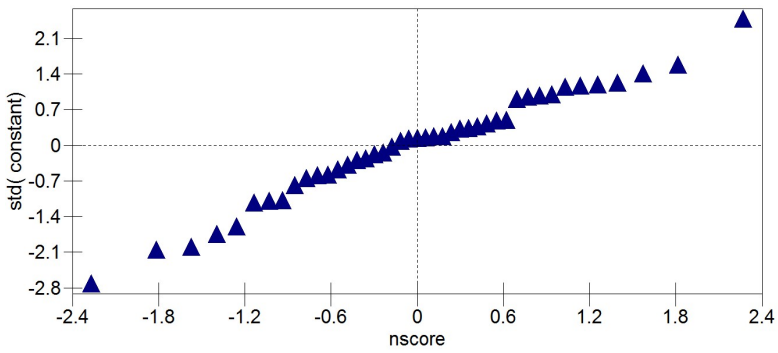
School level plots



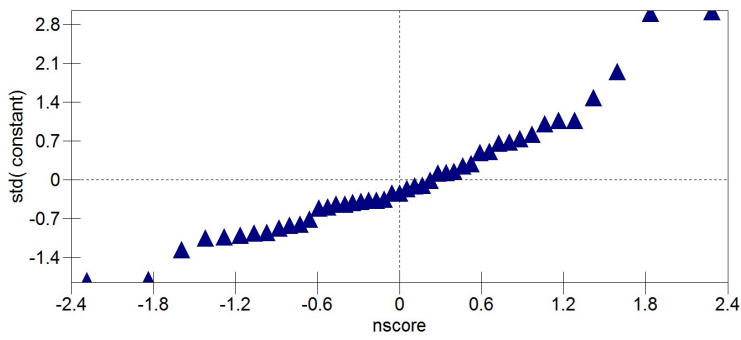
Internalising



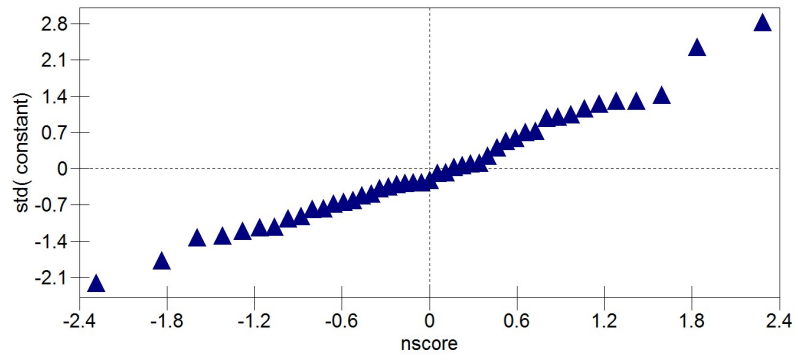
Externalising



Pro-social



Academic – English



Academic – Mathematics